2 The use of digital technologies to enhance foreign language learning

Digital technologies have a crucial role to play in the teaching of foreign languages. However, to fully realise their potential and have a positive impact on foreign language learning, they need to bring an added pedagogical value to classroom practice. This chapter presents ways in which today's digital technologies, including emerging artificial intelligence (AI) tools, can be used in formal learning environments to nurture foreign language proficiency. It considers the development of linguistic knowledge, as well as students' reading, listening, speaking and writing skills. Finally, the chapter outlines some ongoing challenges to the application of digital technologies in foreign language teaching and learning and ways in which teachers can be supported to take advantage of these tools.

Snapshot of technology use in foreign language learning today

- **Digital technologies offer teachers and learners easier access to a greater range of foreign language material than ever before.** This increases the scope for learners to engage independently and extensively with the language they are studying.

- **Various digital tools are available to enhance the reading, listening, speaking or writing experience for foreign language learners.** This includes online dictionaries, glossaries, subtitles and play speed controls as well as various production tools that allow learners to publish and share their work, helping them to develop an identity as foreign language users.

- **Digital technologies allow for collaborative and interactive learning spaces to exist beyond the foreign language classroom.** This can allow teachers to create more time for learners to interact and communicate with each other away from the constraints of timetabled lessons.

- **Developments in AI-powered technologies mean learning activities can more easily and rapidly respond to individual needs.** Various AI tools can provide personalised support to improve the quality of students' writing in a foreign language and teachers can use generative AI to quickly produce written and audio texts at different proficiency levels or for different purposes.

- **However, despite their potential, digital technologies are not having a transformative impact on foreign language teaching and learning.** Teachers need greater support to see the added pedagogical value of using digital technologies in their teaching and quality training in how to implement them.

To have a positive impact on foreign language learning, digital technologies, such as devices, software and applications, the Internet and AI, need to be used in ways that have added pedagogical value. This chapter provides insights into how today's digital technologies can be used to support the development of linguistic knowledge, as well as students' reading, listening, speaking and writing skills. The examples refer to the use of technology in formal or structured learning activities; for insights into how digital technologies can support foreign language learning through informal activities beyond the classroom, see Chapter 8.

How can today's digital technologies support foreign language learning?

Many different digital technologies can help students develop linguistic knowledge

Developing linguistic competence, which includes knowledge and skills related to grammar and vocabulary, is required for reading, listening, speaking and writing in a foreign language and is a crucial foundation of foreign language teaching and learning. It can be developed directly through teaching linguistic forms or indirectly through communication-focused tasks which develop linguistic knowledge as a by-product.

For direct approaches, research from cognitive science and applied linguistics indicates that encouraging students to retrieve knowledge from memory is more impactful than repetition. Therefore, low-stakes vocabulary quizzes are more effective than drilling or re-reading lists of words (Pashler et al., 2007[1]; Perry et al., 2021[2]). In addition, interleaving different types of problems appears more effective than grouping similar ones while feedback can also enhance progress (van den Broek et al., 2018[3]; Nakata and Suzuki, 2019[4]).

In this regard, the use of technology in foreign language learning has come a long way since its initial focus on drill and repeat approaches (Box 2.1). Today, game-based platforms and applications can help teachers and learners implement good practices like interleaving and feedback. Teachers can either choose from ready-made quizzes or create their own. Increasingly, as these platforms adopt AI-powered technologies, quizzes can adapt to students' different foreign language proficiency levels, and provide personalised feedback, targeted practice and reinforcement based on individual students' needs. This means that as well as being an in-class tool they can also support independent learning outside the classroom (Bahari and Gholami, 2022[5]). Game-based approaches have been found to be beneficial for the development of linguistic knowledge in the short and long terms. They can positively impact comprehension, lower anxiety, increase motivation and foster interaction between learners regardless of age or native language (Bahari and Gholami, 2022[5]; Chen, 2016[6]; Chiu, Kao and Reynolds, 2012[7]). Popular tools that adopt such approaches include Kahoot, Quizlet and Quizizz as well as language learning apps such as Duolingo and Busuu.

Box 2.1. How has the use of technology in foreign language teaching developed over time?

The first language laboratories appeared in the 1960s, providing dedicated physical spaces in which students could use audio technology to engage in independent study. In line with prevailing and emerging pedagogies, these approaches emphasised teacher-centred instruction and habit formation through repetition. In both regards, technology offered an advantage by providing endless exercises testing the same knowledge multiple times without the learner getting bored (Tafzoli, Huertas Abril and Gómez Parra, 2019[8]).

Figure 2.1. The use of technology in foreign language learning has responded to digital innovation
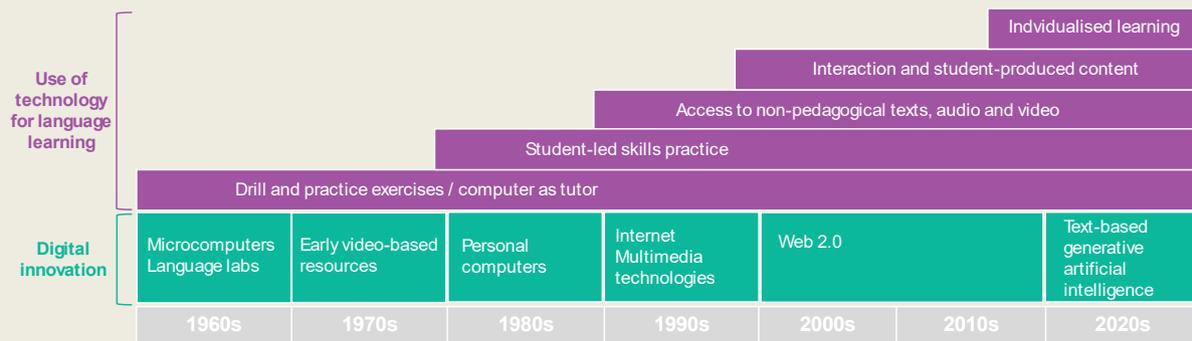
Source: Adapted from Davies, Otto and Ruschoff (2012[9]).

From the 1980s, as the communicative language teaching approach took hold, technology struggled to remain relevant until technological breakthroughs in the 1990s. The spread of multimedia technologies, the Internet and personal computers with word processing tools facilitated listening practice and increased the availability of non-pedagogical texts in the target language. Into the 2000s, the arrival of more interactive and collaborative Web 2.0 technologies such as discussion forums, blogs, wikis and, later, cloud-based tools accelerated this further. In addition, output oriented media channels such as YouTube allowed students to become creators rather than just consumers of foreign languages (Davies, Otto and Ruschoff, 2012[9]). Today, the emergence of AI-powered technologies offers scope for a new step in this direction, one that is more focused on individualised learning.

Source: Davies, Otto and Ruschoff (2012[9]); Tafzoli, Huertas Abril and Gómez Parra (2019[8]).

The use of resource technologies such as online dictionaries, translators or grammar checkers may also support the development of linguistic knowledge. Online dictionaries can facilitate vocabulary acquisition and more successful language use due to the wealth of contextual information they provide including first language translation, target language synonyms and audio files modelling pronunciation (Jin and Deifell, 2013[10]). In addition, through technologies that help analyse texts, students can look for specific words and patterns or pull vocabulary lists that indicate how words are used in different contexts (Bahari and Gholami, 2022[5]; Bikowski, 2018[11]). For many foreign language learners today, such tools are considered to be an essential part of language learning (Perdana and Farida, 2019[12]; Jin and Deifell, 2013[10]).

Text-based generative AI can take resource technologies a step further by providing a one-stop shop for learners. For example, ChatGPT can give students contextualised vocabulary definitions and allow them to ask follow-up questions, including in their first language. It can also generate sample sentences and additional meanings, identify parts of speech, and produce vocabulary notes and explanations of words and phrases to accompany generated text (Kohnke, Moorhouse and Zou, 2023[13]). In this way, AI tools can support teachers to ensure their lesson planning caters to a wide range of learning goals and students' foreign language proficiency (Koraishi, 2023[14]).

Technology increases the range of available reading texts and facilitates comprehension

Learning how to read in a foreign language is arguably the cornerstone of autonomous, lifelong language learning. As foreign language learners become more proficient in reading, they can move from predominantly careful or close reading at word or sentence level to constructing whole-text meaning for a much wider range of texts (OECD, 2021[15]).

The various uses of digital technologies to support the development of linguistic knowledge can also foster foreign language reading proficiency. In many ways, reading in a foreign language is similar to reading in the learners' first language, with the teaching of similar reading strategies, such as activating prior knowledge and making inferences, accelerating students' progress in both (Woore et al., 2018[16]). However, particularly for beginner learners of a foreign language, developing linguistic knowledge is key to making progress in reading and research suggests that first-language cognitive abilities cannot be transferred until a certain proficiency threshold is reached in the foreign language (OECD, 2021[15]).

In addition, the Internet provides learners with easy access to near-endless reading material in foreign languages at all levels. Some studies have found that the sheer range of material available motivates foreign language learners to read more extensively and can push them to access higher level texts than they would typically engage with in a classroom (Behjat, Bageri and Yamini, 2012[17]). In addition, some students perceive reading on digital or mobile devices to be more engaging, more convenient and more accessible than reading paper-based texts (Ishikawa et al., 2014[18]).

At the same time, research indicates that certain features specific to digital texts make reading them more beneficial for foreign language students than paper-based texts. For example, the availability of hyperlinks to additional information and online glossaries or dictionaries can support the development of reading comprehension (Behjat, Bageri and Yamini, 2012[17]). In particular, the ease of access to these tools in comparison to paper-based versions can increase students' motivation to employ them, ultimately improving reading skills (Taylor, 2014[19]). Furthermore, the use of multimedia texts that combine image, audio and text – an approach which digital technologies facilitate – has been shown to be particularly effective (Blake, 2016[20]; Behjat, Bageri and Yamini, 2012[17]).

Collaborative and interactive digital tools mean that reading in a foreign language no longer needs to be a solitary activity. The interactive reading that often takes place on social media platforms, blog sites, wikis or in chat rooms can allow learners to share the cognitive load of interpreting foreign language texts (Blake, 2016[20]). Several studies have shown such tools to have a positive impact on learners' reading comprehension (Behjat, Bageri and Yamini, 2012[17]). Furthermore, by building communities of learners,

technology can make learning more social and more fun, enhancing goal orientation, motivation and persistence and fostering more effective learning strategies (OECD, 2023[21]). Nevertheless, students' perceptions of these approaches appear to be mediated by their foreign language proficiency, with advanced students reporting more positive attitudes (Tian and Wang, 2010[22]). In contrast, beginners may benefit from more structured approaches, particularly with regards to feedback (Bahari and Gholami, 2022[5]).

Developments in AI-powered technologies are bringing new opportunities for the development of reading and other communicative skills within foreign language learning (Figure 2.2). Text-based generative AI can support teachers to produce a range of text types for students that can then be adapted to students' different foreign language proficiencies (Kohnke, Moorhouse and Zou, 2023[13]; Koraishi, 2023[14]). This provides opportunities to expose students to a much wider variety of suitable reading material than is usually available within textbooks. In addition, AI can also easily generate comprehension and expansion questions, whether open-ended or multiple choice (Kohnke, Moorhouse and Zou, 2023[13]; Koraishi, 2023[14]).

Figure 2.2. Possible uses of artificial intelligence-powered technologies for developing the four communicative skills in foreign language learning

Reading	Listening	Speaking	Writing
Text-based generative artificial intelligence (AI) can help teachers more easily differentiate reading material and associated comprehension activities.	**AI voice generators** and other technologies can support teachers to more easily create their own listening resources for a particular purpose, student need or proficiency level.	**AI chatbots** provide students with low-stakes conversation partners to enhance spoken interaction. **Automated speech recognition tools** can support students' pronunciation, giving personalised feedback and modelling how different sounds are formed.	**Automated evaluation** and **corrective feedback and editing tools** provide extensive support to improve the quality of students' writing. **Text-based generative AI** can support students to practise their written interaction skills. It can also allow teachers and students to generate endless model texts to inform learners' own writing. **Machine translation** can support students to work at word and sentence level to put together a text and enhance their linguistic understanding.

Note: The examples presented in the figure are not exhaustive; they summarise the examples included in this chapter.

Digital tools can support both focused and global listening activities

Both exposure to rich foreign language audio input and explicit teaching of listening strategies are essential for developing listening skills in a foreign language. However, it has been suggested that too often the teaching of listening skills is confounded with the testing of those skills. Moreover, such tests typically focus on students' ability to extract basic information, understand trivial opinions and comprehend contrived texts that combine different tenses and vocabulary as opposed to mirroring authentic conversation (Graham, 2016[23]; Graham, Santos and Francis-Brophy, 2014[24]). Rather, combining focused listening exercises that drill down into the specifics of an audio text with more global activities that consider the wider context can be more effective (Graham, 2016[23]; Graham, Santos and Francis-Brophy, 2014[24]).

Technology's principal value when it comes to listening skills is in facilitating access to pedagogical and non-pedagogical listening material on a range of topics relevant to students' lived experiences. In particular, the Internet has marked an explosion in the availability of such content and the multimedia

materials typically found online can foster deeper processing (Blake, 2016[20]; Hubbard, 2017[25]). This increased accessibility extends beyond the classroom so that students can practice their listening skills outside the classroom, helping to increase autonomy (Hubbard, 2017[25]; Rost and Wilson, 2013[26]).

Beyond widening access to audio material, certain digital tools support focused listening practice and the development of key listening skills. For example, readily available tools that facilitate simultaneous listening and reading, such as subtitles, transcripts, captions and glossaries can all enhance students' listening experience and improve comprehension (Mohsen, 2015[27]; Blake, 2016[20]). These tools may also help students to notice particular linguistic features or provide an explanation of the appropriate meanings of phrases within a specific context (Mohsen, 2015[27]; Gruba and Suvorov, 2019[28]). In addition, play speed controls allow teachers and learners to adapt the demands of the listening exercise to their needs and are particularly advantageous when learners control the speed themselves (Hubbard, 2017[25]).

Finally, digital technology facilitates teachers' capacity to create, edit, and publish their own listening resources for a particular purpose or student need. This could include, for example, audio texts designed for more focused listening exercises or for developing comprehension of different accents and multi-speaker dialogue (Gruba and Suvorov, 2019[28]). It could also include multiple listening texts on similar content at different foreign language proficiency levels to support differentiation. Emerging AI voice generators allow teachers to rapidly turn text into speech in different accents and languages, facilitating this process even further. Digital tools also enable teachers to annotate video content with questions, comments, and comprehension checks to create more exciting and interactive listening activities (Blake, 2016[20]). Teachers are thus less reliant on foreign language listening exercises developed by textbook publishers and more able to design activities that go beyond traditional test-style approaches.

Digital technology can provide authentic opportunities to speak a foreign language

In communicative language teaching, learners are not just given opportunities to speak a foreign language but are supported to develop language proficiency through spoken communication. Speaking competence covers skills in both spoken production and spoken interaction as well as fluency, intelligibility and self-correction (OECD, 2021[15]).

Video conferencing can facilitate different types of interactions that support students to develop their spoken language. The most obvious is encouraging learners to speak to each other via video technology which gives them more time to practise their spoken language skills than in face-to-face lessons (Hanafiah et al., 2022[29]; Tian and Wang, 2010[22]). This is important as limited class time is a commonly reported challenge among foreign language teachers in general, and with regards to developing speaking skills specifically (Copland, Garton and Burns, 2013[30]). Encouraging interaction of this nature has been seen to improve spoken fluency and reinforce course content learning. Furthermore, establishing a learner community through video conferencing helps overcome some of the socio-emotional barriers to speaking a foreign language such as anxiousness and embarrassment (Ilic, 2022[31]; Romaña Correa, 2015[32]).

Video conferencing can also facilitate virtual language exchanges to provide geographically and culturally diverse learners with authentic and purposeful interactions in the target language. Research emphasises the positive impact virtual exchanges can have on functional, sociolinguistic, grammatical, and strategic communicative competences as well as intercultural ones (Dooly and Vinagre, 2021[33]). Virtual approaches provide a suitable alternative to physical mobility for students with physical or financial and other resource restrictions. They have received a lot of political support in the last decade with considerable financial investment from certain national and international authorities (Dooly and Vinagre, 2021[33]).

Video conferencing tools also enable learners to use instant voice messaging or share audio files. This type of asynchronous interaction affords foreign language learners more time to reflect on their responses and the opportunity to revise an intervention. This has been seen to positively impact students' speaking and vocabulary skills, increase their motivation and decrease any related anxiety (Yang, Gamble and Tang,

2012[34]; Hanafiah et al., 2022[29]). These advantages are particularly noteworthy given that foreign language teachers state that encouraging students to have the confidence to speak in lessons is a major challenge (Copland, Garton and Burns, 2013[30]). Digital technologies can also be used in other ways to support students to practice their speaking outside lesson time (Box 2.1).

AI tools can support students by providing them with low-stakes conversation partners. A study of teenage English-learners found that talking to a chatbot provides a positive learning environment, helps students to talk more in English and encourages them to develop meaningful negotiation skills to successfully complete speaking tasks. Students reported feeling more comfortable chatting in English with the bot than with their teacher or classmates (Yang et al., 2022[35]).

Meanwhile, as technologies for automated speech recognition and computer-aided acoustic analysis improve, digital tools can increasingly support pronunciation teaching. This is important as teachers can perceive pronunciation as a particularly complex aspect of foreign language teaching. Virtual assistants can help students understand how different sounds are formed so they can imitate the shape of their mouths and the position of their teeth and tongue. They can also provide endless contextualised examples and personalised feedback. Research indicates that automatic speech recognition tools can facilitate improvements in pronunciation more than teachers can (Golonka et al., 2012[36]). In addition, computer-aided acoustic analysis can be more accurate and sensitive in capturing learning gains than teacher assessment in spontaneous speaking tasks (Saito and Plonsky, 2019[37]). Today, tools such as MyET (and its Japanese and Chinese versions, MyJT and MyCT) allow speaking practice with automatic individualised feedback, including on pronunciation.

Finally, digital tools can facilitate spoken production activities as students can easily develop their own audio and/or visual material in a foreign language and share it as widely as they like. For example, student podcasting has a positive effect on performance in speaking and listening assessments, and on learner engagement as students see it as an authentic and fun learning experience (Fitria, Vianty and Petrus, 2015[38]).

Emerging AI tools could transform the way writing in a foreign language is taught

Learning how to write accurately in a foreign language is a complex skill. Foreign language learners must develop skills in written interaction and written production, progressing from translating and producing short factual texts with personal details to more extended writing and subtle uses of style, register and tone (OECD, 2021[15]).

As for reading and listening, the Internet facilitates access to a range of written language models, allowing students to compare their own writing to sample texts and absorb typical linguistic and textual features that they can replicate. In addition, the Internet supports online research, allowing students to cross-check different sources and synthesise them in their own writing (Strobl, 2014[39]). This can be particularly helpful when teaching learners explicit writing strategies such as goal setting, task analysis, planning and editing, all of which are crucial for developing writing proficiency (De Silva, 2014[40]; De Silva and Graham, 2015[41]).

Digital technology can also facilitate collaborative writing in a foreign language which has been shown to improve written accuracy, content selection and textual organisation (Luquin and García Mayo, 2021[42]; Strobl, 2014[39]). Tools such as web-based word processors (e.g. Google Docs), wikis and social media platforms allow students to comment on and amend each other's work, prompting discussion and reflection on the technical components of writing, boosting learner motivation and facilitating the writing process (Zhang and Zou, 2021[43]). Some research indicates that students produce fewer errors in digital collaborative writing environments and that social digital tools help scaffold progressively demanding tasks (Blake, 2016[20]). Furthermore, there is strong evidence that the use of chat functions increases learners' written production in both quantity and complexity (Zhang and Zou, 2021[43]). However, digital collaborative writing can be ineffective when students do not take ownership of a task or spend insufficient time planning

and reflecting; students sometimes see collaborative approaches as inefficient (Zhang and Zou, 2021[43]; Strobl, 2014[39]).

Foreign language learners can also be supported to produce written texts through video or audio production tools, and publication or user-generated content platforms. Some studies have found that enabling students to publish their work for their classmates or a wider audience can help give these tasks more meaning and value in the eyes of students and help students develop an identity as a writer in a foreign language (Blake, 2016[20]).

Finally, there are a range of current and emerging AI-powered writing assistance technologies which could transform the way writing in a foreign language is taught. First, automated writing evaluation tools (e.g. spelling and grammar checkers) and corrective feedback and editing tools (e.g. Grammarly or ProWriting Aid) provide extensive support to improve the quality of students' writing. Recent developments mean these technologies can now give feedback on the organisational and structural aspects of writing too although support at the whole-text level remains limited (Hong, 2023[44]). Providing constructive, corrective feedback on students' work is widely recognised as a highly impactful teaching practice (Hattie, 2008[45]). However, it is resource intensive and puts a high demand on teachers: in TALIS 2018, 41% of lower secondary teachers reported that having too much marking causes them quite a bit or a lot of stress (OECD, 2020[46]). These tools, therefore, offer a clear advantage: they can correct students' writing and provide feedback at greater speed and with more consistency than teachers. Some research indicates they may also support students to develop self-regulation and self-correction skills when writing (Alharbi, 2023[47]). Online grammar checkers have been found to be particularly useful for low-proficiency learners, although an overreliance can impede progress among more advanced learners (Jin and Deifell, 2013[10]; Mohsen, 2015[27]).

As well as increasing the accuracy of writing, AI-powered machine translation can now also help learners (and teachers) produce text in a foreign language. Although there is concern that these tools encourage learners to copy and paste text from their first language to a foreign language with little thought, learner surveys find that it is much more typical for students to look up individual words or phrases rather than translating whole texts. In this way, machine translation supports students to identify the connections between the various languages they know, thus enhancing their linguistic understanding (Alharbi, 2023[47]). Furthermore, generative text-based AI tools allow students to practise their written interaction skills by asking or reformulating questions; they can also see how the technology summarises and presents information (Hong, 2023[44]). In addition, these tools can produce a wide range of text types, providing opportunities for teachers and students to compare their own writing with that of a model text produced by the AI. They can also provide endless writing prompts (Hong, 2023[44]). Box 2.2 illustrates how this can be incorporated into a writing activity through classwork and homework.

Box 2.2. Using ChatGPT to help develop students' writing skills in a foreign language

In an online focus group of foreign language teachers,* one participant described using ChatGPT to support the teaching of writing. The teacher explained that typically, when teaching writing, lesson time would be dedicated to researching content, exploring model texts, identifying useful vocabulary and sentence structures and planning. Students would then use homework or independent learning time to complete the written task. ChatGPT has enabled the teacher to implement a "flipped" approach. Students use ChatGPT at home to undertake preparation for the written task which they then complete in the classroom with the teacher on hand to support the writing itself as opposed to the preparation for writing.

> *We give them the topic in advance and [for homework] they brainstorm about it, they get some ideas and then when they come in they have to write purely in their own language. In that sense, [by interacting with ChatGPT] they are learning the language patterns that they will probably need in the task, and at the same time they have to use their own [words] to put the different pieces together [...] so [in class] we are still assessing their [independent] language [production].*

* The focus group, held online in June 2023, brought together 14 foreign language teachers from Hong Kong (China), Egypt, Hungary, Singapore, Spain and the United Kingdom. All teach in secondary education or in teacher training.

What are the key obstacles to using technology in foreign language learning?

Historically, the mere existence of technologies to support language learning has not translated into classroom-level adoption at scale. Technology use in foreign language classrooms first emerged in the 1960s but by the early 21st century, researchers were lamenting that while technology had revolutionised human interaction in general, the impact on foreign language teaching was minimal (Salaberry, 2001[48]).

For decades, accessibility and affordability have been among the biggest obstacles to the use of technology to enhance foreign language teaching and learning. In its earliest incarnations, the financial costs and impracticalities of the necessary equipment impeded implementation outside a few higher education institutions in a handful of countries (Davies, Otto and Ruschoff, 2012[9]; Tafzoli, Huertas Abril and Gómez Parra, 2019[8]). The arrival of microcomputers in the 1980s improved the accessibility of technologies, at least in theory. However, as technologies continued to develop, the demand for new or updated equipment and digital infrastructure has been ongoing and education systems and settings have struggled to keep up.

More recently, as digital technologies have become both more affordable and pervasive across societies, access in schools and other learning environments has improved considerably and is near-comprehensive in many countries. In the Programme for International Student Assessment (PISA) 2022, the school principals of fewer than one in ten students reported that shortages of digital resources hinder instruction in their school to some extent or a lot. Nevertheless, across all OECD countries, the share of students in schools experiencing a shortage of digital resources rose to nearly one in four (OECD, 2023[49]).

While PISA 2022 results indicate that higher performing education systems ensure that every student has access to a digital device, access alone is not enough to promote transformative practice and the impact of technology use in classrooms on student performance continues to be mixed (Evans, 2009[50]; Escueta et al., 2017[51]; OECD, 2023[49]). Students who reported using computers moderately at school tended to have somewhat better learning outcomes in mathematics than students who used computers rarely, but those using them very frequently did a lot worse, even after accounting for social background and student demographics. This echoes findings from the previous PISA cycle which found the same was also true for

digital literacy and science (OECD, 2023[21]; OECD, 2023[49]). Meanwhile, much of the evidence regarding the impact of technology on teaching and learning outcomes in foreign languages appears to be largely inconclusive suggesting modest benefits at best (Golonka et al., 2012[52]).

Beyond access then, the impactful use of technology in foreign language classrooms requires that teachers know how to implement it in a way that adds pedagogical value. This may be the case more so now than ever before as many of the latest technologies such as AI and smart technologies are best understood as socio-technical systems in which technology and humans need to work together (OECD, 2023[21]). For example, research indicates that the quality and quantity of the teacher's instructional support are the most significant mediating factors in AI's capacity to enhance students' writing skills in a foreign language (Alharbi, 2023[47]; Blake, 2016[20]). Moreover, it should not be assumed that students instinctively know the best ways to use digital tools to enhance foreign language skills. Teachers need to guide them to ensure different technologies foster foreign language proficiency. Indeed, teachers themselves recognise that, although technologies may change the way they teach, their teaching remains essential (Box 2.3).

However, since the earliest days of technology-use in foreign language teaching, getting buy-in from the teaching profession has not been straightforward. An early survey of foreign-language educators in 1978 identified several common challenges across learning environments including teachers' scepticism about the ability of a machine to teach languages, a lack of incentives or accountability structures for teachers to integrate technologies into their teaching and a lack of relevant training (Davies, Otto and Ruschoff, 2012[9]). Although there was some considerable financial investment in hardware and software during the late 20th century substantially fewer resources were attributed to training teachers to use the technology and for providing continuous training to support them to keep up with innovation (Davies, 2002[53]). More recently, an international survey of foreign language teachers confirmed that the most common reason for not using instructional methods that integrate digital technologies was the need for training (Fominykh et al., 2021[54]).

Box 2.3. Teachers' views on how emerging technologies will change their role – or not

In an online focus group* of foreign language teachers, participants were asked how they felt about the emergence of artificial intelligence-powered technologies and their potentially transformative role in foreign language teaching:

> *"I think there's definitely going to be [a] potential shift in terms of we're not so much teaching content, we are facilitators of accessing content. We are explaining this is how you learn a language, the steps you need to develop your proficiency from word level to sentence level to full speech level and I think our role will shift more and more towards that."*

> *"As teachers we have the professional judgement. We know what the new things are, we know the most popular topic, we know students' interests and we can pitch these to students' levels so they find them engaging. It's the relationship building – we understand more about our students, what motivates them. If they lose interest in talking to ChatGPT they need a different way to learn. [For example,] currently ChatGPT and other AIs are text-based and not all students love reading."*

> *"[Students in lower secondary] are not going to be using a computer to teach themselves a language even if we facilitate it by explaining how to learn. We still need to have a big input as teachers. It's a question of making them fall in love with their learning to fully generate them to be very motivated in their learning. It's all dependent on the age and the social and cultural aspect that you can't have with a computer."*

* The focus group, held online in June 2023, brought together 14 foreign language teachers from Hong Kong (China), Egypt, Hungary, Singapore, Spain and the United Kingdom. All teach in secondary education or in teacher training.

Recent data indicate that there may have been some progress in this regard. According to school leader reports in PISA 2022, on average across OECD countries, 88% of 15-year-olds attend schools whose teachers have the necessary technical and pedagogical skills to integrate digital devices into instruction. Moreover, 76% are in schools which make effective professional resources available to teachers to learn how to use digital devices. This marks a considerable increase since 2018 when the share was 64% for both (OECD, 2023[49]).

Alongside high-quality training, teachers need to be convinced of the added pedagogical value of digital technologies for foreign language teaching. Too often, there has been an overly narrow view of technology use in language learning among developers and educational administrators that see it as a way of automating instruction or increasing efficiency as opposed to enhancing the quality of learning (Davies, 2002[53]). Furthermore, international research indicates that while a large share of today's foreign language teachers believe that digital technologies are beneficial for the language classroom, a much smaller share believes that they can have a positive impact on students' foreign language proficiency (Fominykh et al., 2021[54]).

At the same time, common narratives extolling the virtues of digital technologies (i.e. that they can save teachers' time and make their work more efficient) may be misleading and can thus contribute to potential mistrust among the profession towards certain technologies. Technology may introduce some efficiencies, but it also creates new demands on foreign language teachers' time. For example, the sheer vastness of the target-language audio and textual material now available puts a heavy burden on teachers who must effectively navigate and curate the material and monitor the appropriateness, relevance and instructional quality of the content. Without such efforts, the availability of material risks overwhelming learners (Blake, 2016[20]). Furthermore, inconsistency in the quality and accuracy of available tools developed by a largely unregulated education technology market means teachers need to spend time accurately assessing claims made by different resources (OECD, 2021[55]). Rather, helping teachers understand the added pedagogical value technologies can offer their teaching and empowering them to find ways to achieve that added value in practice could help instil greater critical reflection on the most appropriate ways to use technology – and, indeed, when not to use it – in the foreign language classroom.

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