

## Citation for published version

Appel, C. & Fernández, S.S. (2022). Reimagining Language Learning in Higher Education: Key-Roles for Technology. *Lecture Notes in Networks and Systems*, 456(null), 581-602. doi: 10.1007/978-3-031-04286-7\_28

## DOI

[https://doi.org/10.1007/978-3-031-04286-7\\_28](https://doi.org/10.1007/978-3-031-04286-7_28)

## Handle

<http://hdl.handle.net/10609/150379>

## Document Version

This is the Accepted Manuscript version.

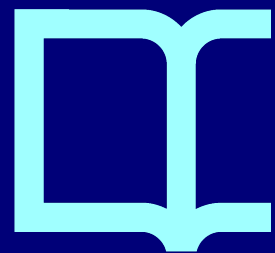
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# Reimagining Language Learning in Higher Education: Key-Roles for Technology



Christine Appel and Susana S. Fernández

**Abstract** The COVID-19 emergency lockdown in 2020 presented an unprecedented challenge that brought technology to the foreground. This chapter discusses the role of technology in language learning at higher education in the aftermath of the abrupt shift to emergency remote teaching due to the pandemic crisis. The chapter briefly introduces the area of language learning, including current trends in pedagogical approaches, focus points and learning objectives as well as the state of the art in computer-assisted language learning. Thereafter, three different but complementary strands for digital tools in language learning at higher education are discussed: digital tools as communication channels, as channels for delivering instruction and as ‘cognitive partners’. We argue that language education can advance the use of technologies in education in general and the acquisition of twenty-first century skills by higher education students, but we also discuss the need of redefining what it means to be a proficient speaker of a language in light of the numerous tools available.

## 1 Introduction

The time is right to discuss technology and education, as the COVID-19 emergency lockdown in 2020 presented an unprecedented challenge that brought technology to the foreground. At very short notice, educational environments all around the world were forced to convert all their teaching practices to an online modality. Language education was no exception and language educators, regardless of their previous experience with online teaching, had to suddenly reorganize their teaching and switch

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C. Appel

Arts and Humanities Department, Universitat Oberta de Catalunya, Av. Tibidabo, 39-43,  
08035 Barcelona, Spain

e-mail: [mappel@uoc.edu](mailto:mappel@uoc.edu)

S. S. Fernández (✉)

School of Communication and Culture, Aarhus University, Nobelparken, Bygning 1481, kontor  
640, Jens Chr. Skous Vej 4, Aarhus C, 8000 Aarhus, Denmark

e-mail: [romssf@cc.au.dk](mailto:romssf@cc.au.dk)

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M. E. Auer et al. (eds.), *Learning with Technologies and Technologies in Learning*,  
Lecture Notes in Networks and Systems 456,  
[https://doi.org/10.1007/978-3-031-04286-7\\_28](https://doi.org/10.1007/978-3-031-04286-7_28)



21 to online environments, often with limited guidance and resources. After the first  
 22 shock and with the experience accumulated since spring 2020, it is now time to  
 23 look forward and reflect on how language education can profit from the lessons  
 24 learnt during the rapid technological adjustment demanded by the pandemic. While  
 25 emerging challenges and opportunities for language education will be our focus, the  
 26 article will also provide food for thought for scholars from other educational areas.

27 In this article, we intend to focus on the interface of technology development  
 28 and language learning/teaching at higher education by adopting a future-oriented  
 29 perspective on how this area of education may develop in the near to middle-term  
 30 future and by focusing on potential accelerators and barriers.

31 We will discuss some of the main difficulties encountered during the abrupt  
 32 conversion to online mode during the pandemic, a period that some authors have  
 33 referred to as emergency remote education [16], pointing out the need to distin-  
 34 guish it from previous experiences of online education given that it was imposed  
 35 by traumatic circumstances and those involved were under psychological pressure  
 36 and anxiety. Some of the main challenges include the struggle to include all students  
 37 [16], the adoption of new teacher and learner roles, maintaining quality in teaching  
 38 and learning and managing emotions [63]. We will provide examples from the emer-  
 39 gency remote teaching period, as well as from regular online and blended teaching  
 40 approaches and virtual exchanges, describing best practices that have led to the  
 41 current developments. Many of these issues revolve around the adequate match of  
 42 pedagogical activities with synchronous and asynchronous modes of interaction, and  
 43 the available technologies to facilitate these.

44 New challenges do not only emerge from crisis but also, perhaps paradoxi-  
 45 cally at first sight, from advances in language technologies. For instance, despite  
 46 widespread use of technologies such as machine translators and grammar correctors  
 47 among students, these technologies are often poorly understood by both teachers  
 48 and learners, which makes teachers and administrators swing between prohibition  
 49 and reluctance to deal with the issue. Therefore, we will also suggest paths towards  
 50 the integration of language technologies in language education, including a raised  
 51 awareness of their limitations and risks.

52 Our empirical point of departure for the present discussion comes from two rather  
 53 different higher education contexts: a traditional university with physical and blended  
 54 classes (Aarhus University, henceforth AU) and a full online university (Open Univer-  
 55 sity of Catalonia, henceforth UOC). The former had to reorganize its teaching online  
 56 literally overnight at the outbreak of the pandemic. This process highlighted the need  
 57 for a better understanding of the role of technology as a mediational tool in language  
 58 learning as educational technology already available, but so far not fully exploited,  
 59 was forced to the foreground in response to a sudden change in the learning setting.  
 60 As so many other higher education institutions around the world, AU had to address  
 61 the strenuous circumstances surrounding students, teachers, and other staff members,  
 62 but they were able to continue teaching with few adjustments to the systems already  
 63 in place. On the other hand, one could say that UOC in many ways continued “busi-  
 64 ness as usual”, except for the fact that all actors involved—students, teachers, and  
 65 coordinators—were affected by the pandemic, which hit Spain badly and brought

66 about some particularly harsh lockdown measures. In terms of university mecha-  
67 nisms, the health crisis precipitated the application of online examinations, which  
68 had already been piloted but was still not entirely deployed in March 2020.

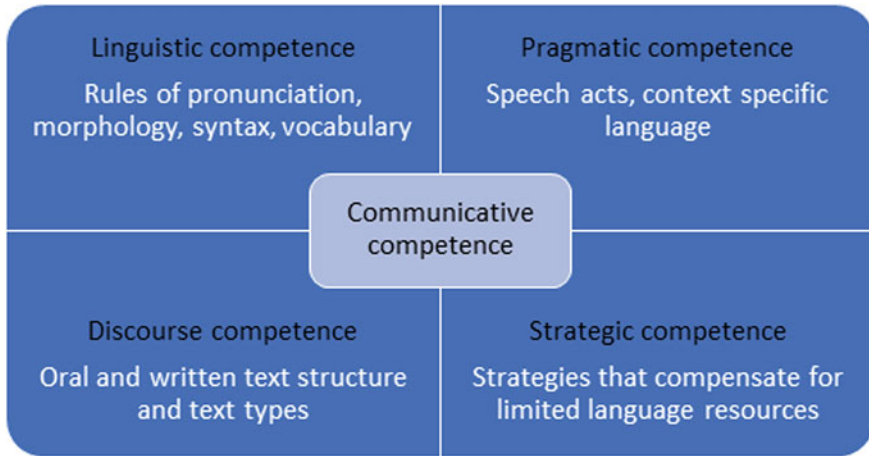
69 The structure of the chapter is as follows: we will briefly introduce to the area of  
70 language learning, including current trends in pedagogical approaches, focus points  
71 and learning objectives, as well as the state of the art in computer-assisted language  
72 learning. Thereafter, we will propose three different but complementary strands for  
73 digital tools in language learning at higher education: as communication channels,  
74 ‘cognitive partners’ and means for delivering instruction.

## 75 **2 Introduction to the Area of Foreign Language Learning** 76 **and Teaching: Current Trends in Pedagogical** 77 **Approaches, Focus Points and Learning Objectives**

78 At present, the overall aim of foreign language education is to develop the student’s  
79 ability to perform appropriately, fluently, and precisely in the target language, orally  
80 and / or in writing, in a variety of situations. Learners are therefore considered not  
81 only just learners, but language users and social agents from the very beginning.  
82 In previous decades, the emphasis was on the development of linguistic compe-  
83 tence, i.e., pronunciation, vocabulary, and grammar, with a greater focus on declar-  
84 ative knowledge (knowledge about the language) than on procedural skills (being  
85 able to use this knowledge in communication) [24]. This focus has characterized  
86 traditional language teaching, e.g., the well-established and widespread Grammar-  
87 translation method, where grammar teaching, translation practice and guided exer-  
88 cises were considered key to acquiring and developing the language. The change  
89 in perspective from language knowledge to language use has been gradual, slow,  
90 and characterized by several perhaps contradicting approaches that still to some  
91 degree coexist. At higher education level, the communication-oriented approach can  
92 be combined with a primary focus on system knowledge and theory, particularly in  
93 the context of, for example, language teacher or translator/interpreter training [2,  
94 3, 34], in contrast to language courses simply aimed at promoting higher education  
95 students’ language competences as additional competence (e.g. English courses for  
96 Engineering students), where less explicit declarative language awareness is needed.

97 The present widespread communicative approach to language learning [21, 55]  
98 expands our understanding of language to comprise, in addition to linguistic compe-  
99 tence, pragmatic knowledge and skills, communicative strategies and learning strate-  
100 gies, as well as discursive knowledge and skills of conversation and text structure  
101 (see Fig. 1). This includes all the linguistic aspects that are required for a learner to  
102 develop and use the target language communicatively and brings the communicative  
103 contexts in which the target language is to be used to the foreground.

104 Focus on communicative competence [20] implies the need for communicative,  
105 task-based teaching methods [33, 60], where students are given the opportunity to



**Fig. 1** Aspects of communicative competence ( adapted from Henriksen [47]: 57)

106 use the language actively (solve “tasks”), engage in a variety of communicative  
 107 situations and work with different types of authentic, multimodal texts. Particularly,  
 108 the understanding that language learners need to use the language out in the world  
 109 and interact with people beyond their own local environment, both as end goal for  
 110 language education, and along the way in order to train exactly this ability, has  
 111 evidenced the need for an “intercultural” approach, and this has given rise to a new  
 112 competence dimension.

113 Through the work of Michael [18], the concept of communicative competence has  
 114 been enriched with an additional competence, intercultural competence, giving rise  
 115 to the now well-established notion of Intercultural communicative competence as all-  
 116 encompassing goal for language education, and bringing the intercultural dimension  
 117 to the forefront [19]. The idea is that students must not only be able to use the  
 118 language in a context-adequate fashion but must also possess the ability to interact  
 119 with language users from other cultures [78]. “Cultures” is understood not only as  
 120 national cultures, but much more broadly as any kind of grouping that we as humans  
 121 belong to, be it related to national origin, religion, sexual orientation, professional  
 122 interests, hobbies, or the like. This expands the view of language learning to include  
 123 dimensions of identity and personal development.

124 The shift in the understanding of language learning, from a narrow focus on  
 125 linguistic competence to communicative competence and later intercultural commu-  
 126 nicative competence, has been accompanied by large pendulum swings and the  
 127 emergence of new theoretical positions [59]. The first major shift was from the  
 128 Behaviourist view of language learning, as the acquisition of habits, to Cogni-  
 129 tive approaches focusing on the learner’s complex acquisition processes, including  
 130 hypothesis development and testing as the driving force in the development of  
 131 the student’s interlanguage (emerging language), and Sociocultural approaches that  
 132 emphasize the fact that language acquisition takes place in a social context with

133 the help of others. Interaction with other learners or users of the language plays,  
134 therefore, a major role in the collaborative learning process as understood today, and  
135 support from both teachers, learners and digital tools has become crucial, particularly  
136 in the form of feedback.

### 137 3 State of the Art About CALL

138 Computer-assisted Language Learning (CALL) studies the use of technology in  
139 language teaching and learning since the early 1980s. Since then, and as computers  
140 have evolved into a variety of devices that have become a part of our everyday lives,  
141 the study of CALL has developed rapidly, evolving from early studies about the use  
142 of CD-ROM materials for language learning to the present studies of remote emer-  
143 gency teaching during the COVID-19 pandemic. Much has happened in-between,  
144 and CALL has become a broad area of study encompassing many dimensions [57],  
145 computer-mediated-communication (CMC) being one of the dimensions that has  
146 attracted special attention from instructional designers and researchers. Along the  
147 years, alternative terms have emerged, such as Technology-Enhanced Language  
148 Learning (TELL), network-based language learning or information and commu-  
149 nication technologies for language learning [58]. In this chapter, we use the term  
150 CALL as a broad term including all the above.

151 Computers have become an unavoidable actor for instruction in foreign/second  
152 languages, as they allow both learners and teachers to access materials and courses,  
153 interact with others, write in their target languages, use the language in and out of the  
154 classroom with speakers around the world, and even take their language tests—all  
155 of this exponentially enhanced by the ever-growing spread of the internet [25]. Otto  
156 [73], in her historical review of technology for second language learning, paints a  
157 compelling picture of how the fundamental media for language learning and teaching  
158 (text, audio, video and images) have remained constant, unlike their technological  
159 formats and their role in instruction (p. 21). She describes an evolution of CALL from  
160 delivery via localized technologies (starting with mainframe computers in the 1960's)  
161 to the network-based means of today, where access is available anywhere and at any  
162 time. Advances in technology have allowed computers to gradually respond more  
163 and more to today's pedagogical and methodological requirements. For a number  
164 of years, and up to the early 1980s, computers provided mostly drill-like prac-  
165 tice in the form of flashcards for vocabulary learning, uncontextualized grammar  
166 exercises and translations, having the role of “drill-master and tutor”, due to the  
167 fact that the technology was not yet able to cope with more complex communi-  
168 cation and interaction. The inclusion of games for instruction in the 1980's was,  
169 according to Otto, one of the first attempts to move away from drilling and to add  
170 an element of fun. At the same time, the growing focus on communication brought  
171 about the production of materials that exploited authentic media, including films,  
172 news programs, documentaries, commercials, and satellite technology allowed for  
173 broadcasting programs for language learning. Language corpora also became more

174 and more deployed about this time, giving way to data-driven language learning,  
 175 as concordancing programs allowed searching for words and constructions in their  
 176 natural context of use. Advances in corpora included the construction of learner  
 177 corpora, which made it possible to identify learning problems to be addressed in the  
 178 classroom [44].

179 The arrival of the Internet in the early 1990s is a colossal landmark, which  
 180 contributed to cementing the role of the computer as tool and medium. One of  
 181 the Web's many contributions is the emergence of Learning Management Systems  
 182 (LMSs) or Course Management Systems (CMSs) (see also Sect. 4.3) and VoIP  
 183 or video conferencing programs, allowing to host synchronous and asynchronous  
 184 learning activities, administer tests and store materials. This enabled the delivery of  
 185 online, blended and hyflex (simultaneously online and in the physical classroom)  
 186 instruction, widespread modalities which are exploited in a variety of settings and  
 187 have been a game-changer at the outbreak of the COVID pandemic, as they allowed  
 188 instruction to go on despite a worldwide lockdown that secluded teachers and learners  
 189 from learning institutions. These instruction forms have the potential of leading to  
 190 transformative language learning, fostering inclusiveness by making room for vulner-  
 191 able, marginalized groups to get a voice, thus contributing to decolonizing language  
 192 education [42]. Likewise, CMC, already mentioned, was fostered by the raise of the  
 193 World Wide Web (and enhanced by the Web 2 or social web in the 2000s, and by  
 194 mobile devices such as phones and tablets that allow for constant connectivity) and  
 195 arose in the mid-1990s as an area of study, still present today, particularly regarding  
 196 communication in social media and digital literacy [46].

197 This evolution of the computer's role presented in Otto's [73] historical review was  
 198 accounted for by Warschauer [82] and Warschauer and Healey [83], who proposed  
 199 three CALL phases: structural/behaviouristic, communicative/cognitive and integra-  
 200 tive/sociocognitive. In a slightly more critical version, Bax [8] termed the phases as  
 201 Restricted, Open and Integrative. Regardless of terminology, both conceptualiza-  
 202 tions of CALL's development strive towards normalization: "CALL finally becomes  
 203 invisible, serving the needs of learners and integrated into every teachers' everyday  
 204 practice" (Bax [8], p. 27). From a pedagogical point of view, Bax's three types of  
 205 CALL do not exclude each other and are in fact coexisting, as different pedagogical  
 206 approaches do also coexist today. Although a tutor-like/behaviouristic function may  
 207 still be justified in certain contexts, the real potential of CALL nowadays lies in  
 208 its enabling learners to take initiative and become more autonomous, in facilitating  
 209 communication with others and in widening the possibilities of virtual exchange and  
 210 distance education. This potential is not only held in formal teaching and learning  
 211 contexts but has also given rise to a myriad of opportunities for informal learning.  
 212 Mobile Assisted Language Learning (MALL), a subset of CALL, studies the use of  
 213 Apps for language learning from devices such as smartphones or tablets that have  
 214 become popular amongst learners who choose to learn a language outside a formal  
 215 context. Social networking sites devoted to language learning have also tapped into  
 216 the potential of large numbers of language learners on the web looking to have contact  
 217 with native speakers of their target language [53].

218 CALL's affordances, today more than ever, call for teacher training in the use  
 219 of information and communication technologies, a discussion that has come to the  
 220 fore with the pandemic. Pre- and in-service teachers need not only technological  
 221 skills, but also knowledge of how to use the technology and for what purpose from  
 222 a pedagogical perspective [47]. At the same time, they need to reflect on their role  
 223 in the digital learning environment, not so much as being in charge, but rather as  
 224 facilitators and advisors [23]. Recently, and especially after the pandemic, there are  
 225 new demands for wellbeing to be included in the curriculum of teacher training  
 226 programs, in response to the stress that a lack of training in this respect can cause in  
 227 teachers [63].

## 228 4 Three Strands for Digital Tools in Language Learning

229 In this section we intend to zoom into what we consider the three main areas where  
 230 technology, in the form of digital tools, is defining and redefining language instruction  
 231 both at higher education and beyond. We are referring to digital tools, which allow  
 232 language users and learners to communicate with each other despite geographical  
 233 distance; digital tools, which become partners in cognition for language learners and  
 234 users; and digital tools used for delivering language instruction. For each case, we  
 235 discuss their affordances and challenges.

### 236 4.1 *Digital Tools as Communication Channels: Virtual* 237 *Exchange for Intercultural Competence*

238 Online teaching across disciplines connects with an understanding of technology  
 239 primarily as a tool for communication that helps orchestrating learning. In the case  
 240 of language learning, the internet also gives access to a rich 'context' for the target  
 241 language [52], most notably through 'virtual exchanges' [71]. This teaching practice  
 242 gained consolidation during the pandemic and is arguably the practice with the  
 243 strongest potential for improving the students' 'linguacultural' [78] proficiency.

244 "Online intercultural exchange" (OIE) is a pedagogical tool that consists in  
 245 bringing together learners from different locations so that they can get to know  
 246 each other, exchange information, or work together to solve a common task. In the  
 247 pedagogical literature, there is normally a differentiation between putting into contact  
 248 whole classes of learners—often divided into groups—, called *telecollaboration*, or  
 249 pairing two learners, normally referred to as *tandem*. In the case of both techniques,  
 250 the practice is quite extended around the world for foreign language learning at all  
 251 levels of the educational system, but it is still under development. The understanding  
 252 of foreign language learning as communication and as a site for personal intercultural  
 253 development has made this kind of communication across geographical locations an



254 attractive possibility for language teachers, with humble beginnings through “pen  
 255 pals” in less technological decades, e-mail exchanges in the beginning of the internet  
 256 era, to the many digital communication channels—synchronous and asynchronous—  
 257 that we have today. OIE can also take place between learners of the same foreign  
 258 language who are placed in different geographical locations and use the language  
 259 that they are learning as a lingua franca to communicate with each other.

260 The literature on OIE emphasizes two main purposes of this pedagogical tech-  
 261 nique: developing language skills and promoting intercultural competence [70].  
 262 Indeed, numerous studies have shown the advantages of OIE for these purposes  
 263 (see e.g., Belz [10]; Belz and Thorne [12]; Morollón Martí and Fernández [67] for  
 264 language skills, included pragmatic skills, or Belz and Kinginger [11], O’Dowd  
 265 [37], Fernández and Pozzo [68] for intercultural competence and cultural awareness,  
 266 among many others), but we believe that this is far from the whole picture. OIE  
 267 offers a perfect setting for learners to develop not only language and culture related  
 268 competences, but more broadly the whole spectrum of twenty-first century skills  
 269 (also known as “non-cognitive skills,” “whole child development skills,” “soft skills,”  
 270 “transferable skills,” “transversal competencies,” “life skills” and “social-emotional  
 271 skills” [43]), defined as:

272 abilities and attributes that can be taught or learned in order to enhance ways of thinking,  
 273 learning, working and living in the world. The skills include creativity and innovation, crit-  
 274 ical thinking/problem solving/decision making, learning to learn/metacognition, communi-  
 275 cation, collaboration (teamwork), information literacy, ICT literacy, citizenship (local and  
 276 global), life and career skills, and personal and social responsibility (including cultural  
 277 awareness and competence) [13].

278 Besides 21st century skills, OIE has another obvious potential learning outcome:  
 279 the acquisition of content knowledge of any kind, according to the exchange design  
 280 and to the kind of information exchange or kind of common project work that learners  
 281 are set up to perform. In educational settings (like in Denmark), where language  
 282 education is conceptualized as language and culture education (see e.g. the language  
 283 curricula from the Danish Ministry of Education [30]), there is an element of content  
 284 learning (be it history, society, politics, geography, among others) embedded in most  
 285 language classes, and more often than not OIE projects will include an element of  
 286 content learning (see e.g. [36, 37] for a project where AU students learn Argentinian  
 287 history—besides language and intercultural skills—through OIE).

288 With this broader view of OIE in mind, it is clear to us that this technique,  
 289 which emerged in language education with language and culture skills in mind,  
 290 is in fact equally useful and relevant to other subject areas in education, including  
 291 higher education, as it allows the development of much more than just language  
 292 and cultural/intercultural competence. Today, there are OIE projects around the  
 293 world, which are initiated in other educational fields than language studies (see e.g.  
 294 the *Soliya* project at <https://soliya.net/>, or see O’Dowd [69] and Dooly and Sadler  
 295 [32], who argue for the integration of OIE in teacher education), but this is an area  
 296 where language education has been at the forefront and no doubt has contributed to  
 297 advancing pedagogical development in other education areas as well.

#### 4.1.1 OIE Pre, During and Post Pandemic

As explained in the previous section, OIE has been practiced in language education (and beyond) for some time, and the two universities which are at the core of this article are of course no exception.

For a traditional university like AU, the first telecollaborative projects were connected to Ph.D.-projects [49, 66], which later became an inspiration source for a more permanent practice in the respective departments (French and Spanish). The beginnings were plagued with technological difficulties and insecurities (related to e.g. unstable internet connections, malfunction of recording programs, lack of expertise in using the digital tools), a well-known problem in OIE [70], as well as organizational difficulties related to the collaboration with teachers and students from other institutions and locations (e.g. difficulties in agreeing on a date and time for the synchronous sessions, different understandings of punctuality, discrepancies in instructions given by the teachers involved on each side) [36], but as everything else, experience was gained and insecurities were overcome along the way, and this experience was part of the background that facilitated AU language teachers and students' rapid transition to online teaching on the 13th of March 2020, when the country went on lockdown. From that date on and during the following 1½ year, most teaching was performed online via zoom or other communication platforms, much like students had tried in their OIE activities. This time, students were communicating with each other and with their teachers instead of with partners from other locations, or rather they were doing both things, as OIE activities continued for some of the students and were the only opportunity for mobility (virtual mobility). The reopening of campus and the return to presential classes is welcomed by students, but the use of communication technology has become an integral part of the students' and teachers' pedagogical toolbox and will continue to be present both for in-house and international communication.

For a fully online university such as UOC, in which students are engaged in the use of ICTs as their main means of communication with their teacher and classmates, as well as with the institutional administrative academic services, OIE is a means to broaden horizons by providing contact with students who are native speakers of other languages and belong to other cultural settings, providing an ideal arena to develop the twenty-first century skills mentioned above. OIE projects are also seen at UOC as an opportunity to pilot new technologies and modes of online collaboration before streamlining these practices in regular language courses with higher stakes related to their degree examinations. Thus, early experiences in tandem language learning projects in UOC started in 2008 (see [4, 7]) using Skype, web-based materials for activity instruction and input, and a Skype recorder to be able to carry out post-task reflection activities. While UOC learners were supposed to be familiar with the use of technology for education, the use of VoIP (Voice over Internet Protocol) tools was still incipient in Spain back in 2008 and presented some challenges. In addition, tandem partners in the UK and Ireland were not used to online language programmes, which meant that technological difficulties with downloading and installation of programmes had to be dealt with. User guides were developed and a forum for

342 technological issues was set up. However, the main hurdle to be overcome was not  
 343 technological but related to foreign language anxiety (FLA), a common phenomenon  
 344 in many learners when it comes to speaking practice [15, 48, 75]. On the other side  
 345 of the coin, one of the main outcomes was a huge sense of accomplishment and  
 346 empowerment once learners were able to overcome their initial reticence along with  
 347 the anxiety experienced at the prospect of having to converse with a native speaker  
 348 of their target language [4].

349 The early OIE experiences in UOC led to the development of tools and a pedagogical  
 350 approach for online speaking interaction practice within the framework of the  
 351 SpeakApps project [5], which were incorporated to foreign language online classrooms  
 352 and employed for learner-learner interaction. The main feature in this approach  
 353 is the conceptualization of synchronous work. When UOC was founded in 1994 as a  
 354 100% online university, its motto was that students could learn from anywhere and  
 355 at any time. This, together with the available technologies at the time, meant that  
 356 teaching and learning were fully asynchronous, which posed a challenge for foreign  
 357 language courses, in particular when it came to teaching and assessing speaking interaction  
 358 skills. The approach taken in the early 2010's was to introduce synchronous  
 359 speaking interaction activities within pairs or small groups of learners, guiding the  
 360 interaction with a tandem tool that distributes content to guide the conversation in real  
 361 time, fulfilling the role of the teacher in face-to-face classrooms. Interactions were  
 362 recorded so that learners could carry out post-task reflection activities and teachers  
 363 could provide feedback or assessment.

364 The introduction of speaking tasks in the language courses of the Centre for  
 365 Modern languages at UOC, along with the increasing popularity of online courses in  
 366 Spain, meant that the number of students signing up for language courses increased  
 367 rapidly, posing a challenge to the organization of OIE activities. The logistics of  
 368 finding OIE partners for thousands of learners was just not feasible. A different  
 369 approach was implemented, adapting an emerging new popular model for online  
 370 courses around 2012, Massive Open Online Courses (MOOCs). Thus, in 2014, the  
 371 first edition of *tandemMOOC English-Español* was offered. This course was aimed  
 372 at learners of English who were L1 speakers of Spanish and learners of Spanish who  
 373 were L1 speakers of English. The course was designed as a complement to intermediate  
 374 (or upwards) English and Spanish as a foreign language courses providing  
 375 speaking opportunities for learners. The main dynamic was the tandem roulette:  
 376 taking advantage of the massive element of the MOOC, it was possible for learners  
 377 to connect at any time and be paired with a random tandem partner. As learners were  
 378 connected, carefully designed tasks for tandem language learning were launched to  
 379 guide the conversations in a way that would make the most out of the learning potential  
 380 of these encounters: pushing learners beyond their level so that they would be forced  
 381 to get help from their tandem partners, exploiting thereby their dual learner/expert  
 382 roles.

383 UOC's *tandemMOOC* has evolved over the years (for a detailed description see  
 384 Appel and Pujolà [6]) to be offered annually. In April 2020, an additional edition was  
 385 offered to cater for the needs of language learners of English and Spanish who were  
 386 confined to their homes during lockdown. This was a unique edition carried out under

387 strenuous circumstances and, aside from the usual benefits of OIE outlined earlier in  
 388 this section, it gave learners from different parts of the world the opportunity to talk  
 389 about the trauma they were experiencing and share their stories [28, 35].

## 390 4.2 *Digital Tools as Partners in Cognition*

391 In this section we refer to specific digital tools that can act as ‘partners in cognition’,  
 392 that is, tools that can “aid in cognitive processing, can support intellectual perfor-  
 393 mance and enrich individuals’ minds” ([80], p. 2). Partners in cognition tools include  
 394 calculators, equation solvers, spreadsheets, simulations and the like. For language  
 395 learning, electronic dictionaries (which apart from definitions and contexts of use  
 396 give access to pronunciation models) would be a prime example, among a large  
 397 number of other technologies.

398 In the past decades developments in Language Technology has given rise to a  
 399 myriad of tools that can support language learners in their target language use. These  
 400 technologies exploit the fact that computers can now process, understand and produce  
 401 human languages in both written and spoken form and apply these capabilities to  
 402 tools and apps that are increasingly easy to access and use ([https://nors.ku.dk/english/  
 403 research/language-technology/](https://nors.ku.dk/english/research/language-technology/)). Such technologies include, among others, programs  
 404 that can convert speech to text, text to speech and text or speech in one language to  
 405 speech in another language—allowing people to have conversations in languages they  
 406 do not master-, grammar- and style-checkers, corpora-based lexica, word prediction  
 407 and machine-translation. These tools are reshaping the workflow and competences of  
 408 language professionals like translators and lexicographers but are also increasingly  
 409 integrated in everyday practice through word processors and keyboards for mobile  
 410 phones. Although these technologies all share the fact that they were not created as  
 411 pedagogical tools, they are increasingly relevant for language students and teachers,  
 412 as they are diligently used by learners as a learning resource. At the same time,  
 413 they can be seen as a challenge to learners’ development of language competencies,  
 414 as these technologies do a good part of the job, reducing learners’ cognitive load,  
 415 but making them dependent on the technology in order to perform [22]. Language  
 416 technologies have become increasingly accurate, to the point that writers can get  
 417 support for finding the right word, rephrasing a sentence, or directly translating from  
 418 a better mastered language. Besides increased accuracy, these tools are ever more  
 419 easily available, as they are, for example, currently integrated in widespread programs  
 420 such as Microsoft Word and Google Docs.

421 Even though availability and affordability can no doubt be seen as conducive to  
 422 inclusiveness and equal access for a wide range of learners, these tools can still widen  
 423 the gap between more and less resourceful learners—resourcefulness understood in  
 424 this case as cognitive or academic rather than economic. When algorithms can support  
 425 language choices, strategic learners can use language tools to improve their processes  
 426 for producing language, but the same tools can also be used by less thoughtful learners  
 427 with exclusive focus on the product, without understanding the language options at

428 hand and the underlying technology. Language technologies offer a range of more  
 429 or less suitable solutions and therefore require strong competences about language  
 430 use and cultural appropriateness [29].

431 Just to provide an example of the challenges that the increasing availability of  
 432 language technologies can pose, we can mention the case of the Centre for Modern  
 433 Languages at UOC. Here, the abusive use of language technologies has so far led  
 434 to a revision of the definition of plagiarism in continuous assessment and the inclu-  
 435 sion of systems to detect cases as varied as automatic translation of texts written by  
 436 others, reading aloud these translations, having somebody stand next to the learner  
 437 while recording a video prompting what to say, or submitting a video with the  
 438 learner's image but dubbed by somebody else. On a more positive note, the Centre  
 439 for Modern Languages at UOC has included in its syllabi the teaching of strategies  
 440 for using electronic dictionaries, online translators, and search engines as informants  
 441 of collocations, tapping on their potential to support autonomous language learning.

442 Language technologies make assessment of language competences rather blurry,  
 443 which calls for a rethinking of what it means to master a language. While examination  
 444 forms can try to prevent the use of language technologies, these same technologies  
 445 are here to stay for students and teachers. However, it is still uncharted territory  
 446 how these technologies should be integrated in language learning curricula beyond  
 447 specialised niches such as translation. Digital tools as 'cognitive partners' is an  
 448 open question at this stage because the introduction of language technologies is  
 449 fuelled by changes that teachers (let alone administrators) are experiencing rather  
 450 than promoting. The pandemic has indeed made it more difficult to negotiate rules  
 451 of engagement with these tools and to promote their understanding, as distance  
 452 learning posed an additional obstacle. Post pandemic normality will call for continued  
 453 efforts in integrating language technologies in ways that promote learning as well as  
 454 performance.

### 455 ***4.3 Digital Tools as Channels for Delivering Instruction***

456 The late 1990s brought Language Management Systems (LMS), also referred to  
 457 as VLEs (Virtual learning environments), to higher education. These web-based  
 458 software applications provide a framework to support all the aspects of teaching and  
 459 learning processes, from administration and course design to delivery, tracking, and  
 460 communication, and have facilitated the development of blended and online language  
 461 learning courses over time.

462 Blended courses can vary from hybrid models that combine face-to-face and  
 463 online delivery, assigning a percentage of sessions to each format, e.g., 70/30% [1]  
 464 to models that thoughtfully integrate face-to-face and online learning [39]. In the  
 465 context of language learning, [41] identified some concerns about online learning by  
 466 language learners engaged in blended learning formats. These concerns were related  
 467 to the development of speaking interaction skills, the relationship with classmates  
 468 and teachers, time management and student understanding, and it became clear that

469 different students had different preferences based on their personality traits (e.g.,  
470 shyness). The development of new technologies since then has surely changed how  
471 learners see some of these aspects, and already in Owston [74] called blended learning  
472 spaces the new normal in higher education. Regardless of how some aspects of face-  
473 to-face classrooms are adapted to the online environment, what stands out is the  
474 fact that the incorporation of online learning brings about the rupture of traditional  
475 classroom walls, opening learning environments to the outer world [17, 42, 54] and  
476 thereby leading to a variety of new opportunities of contact and interaction with the  
477 target language and culture.

478 Online courses bring the notion of blended instruction to its full online version,  
479 offering education to individuals who may not be able to attend face-to-face teaching  
480 due to a variety of reasons such as jobs, family duties, geographic location, etc. Traditionally,  
481 distance education would cater for these individuals' needs albeit numerous  
482 challenges such as isolation, lack of support and a consequent drop in motivation [38]  
483 due to its primarily self-study approach. It has even been suggested that "distance  
484 education has been more evolutionary than revolutionary" ([84], p. v), but technology  
485 has turned the tables: not only has the transition to online learning brought multiple  
486 solutions to the shortcomings of previous distance education experiences, but it has  
487 also facilitated new pedagogical approaches. Online learning environments have the  
488 potential to enable learners to be more autonomous and to increase opportunities to  
489 use the target language, thus facilitating student agency. Indeed, online learning has  
490 been associated with the development of twenty-first century soft skills [13].

491 There are also issues that have had to be addressed in the context of fully online  
492 language courses and have resulted in innovative enhanced solutions that have eventually  
493 made its way to blended learning. These issues revolve around the provision of  
494 input, feedback, and examinations. Multimedia interactive materials include audio  
495 and video, which are essential for the teaching of languages and allow for immediate  
496 automatic comprehension checks and a certain degree of personalization when  
497 tracking systems monitor the learner's progress. In terms of feedback provision,  
498 the initial obstacle of distance has given rise to tools that allow for the integration  
499 of rubrics, i.e., error categories accompanied by explanations, video- and audio-  
500 annotations, or screencasting that can illustrate how the teacher models a good practice,  
501 etc., opening up for a myriad of new and richer methods for teachers to provide  
502 feedback, and for guiding and supporting peer-feedback. Language exams need to  
503 cover the different competences involved (see the Common European Framework of  
504 Reference for Languages—CEFR [26, 27]) and can result in long, time-consuming  
505 and costly processes that include, among others, oral examination sessions with the  
506 attendance of external examiners. While online language learning courses have been  
507 slow to integrate all the language competences proposed by the above mentioned  
508 CEFR, video streaming and the latest video conferencing technologies have allowed  
509 for a full integration of all these competences, including speaking interaction.

510 A successful example of the integration of speaking skills in online education  
511 is the Centre for Modern Languages at UOC. At UOC, more than 6.000 students  
512 register for language courses each semester. Of these, over 5.000 take English as  
513 a Foreign Language (EFL) courses, the vast majority as a compulsory subject in

514 their degrees. In this setup, the roles of instructional designer and teacher are clearly  
515 differentiated, since some of the subjects can have between 1000 to 3000 students,  
516 who are distributed into classrooms assigned to teachers who work part-time for  
517 the university. Subject coordinators work full time and are responsible for designing  
518 the course, which comprises activities, materials, evaluation, and teacher training  
519 actions (e.g., related to marking standardisation in order to ensure homogeneity  
520 across classrooms). This university, founded in 1994, is the first online university to  
521 our knowledge and prides itself on teaching online, and not at a distance, claiming  
522 that its online teaching brings students closer to the teacher and student fellows, while  
523 allowing each student to work at their own pace from anywhere in the world. Students  
524 belong to a classroom assigned to a teacher and to a group of students who work  
525 in pairs and/or small groups towards their learning goals. In the earlier years, due  
526 to technological limitations, the evaluation results of these courses could only guar-  
527 antee accreditation for writing and reading skills, but, as the technology evolved,  
528 by 2010 listening and speaking skills, production as well as interaction, were being  
529 taught and evaluated online. The key to the management of the teaching of speaking  
530 skills was to reconceptualize synchronous sessions. In order to enhance speaking  
531 practice, students were asked to work in pairs synchronously with the assistance of  
532 a tool that distributed contents in real time. Interactions were recorded for teachers  
533 to provide feedback and/or evaluate at a later stage and for learners to carry out  
534 reflective post-task activities. This meant that all students were actively engaged  
535 in speaking activities without infringing on their time flexibility and time manage-  
536 ment, since they only had to arrange to meet with one other student (or with two or  
537 three for small group work) for a given task. These speaking activities together with  
538 collaborative writing tasks meant that students got to strengthen their relationship  
539 with other members of the class, as end-of-course surveys during the first years of  
540 implementation indicated. This was paramount in a fully online environment since  
541 stronger bonds with classmates can be a deterrent of abandonment.

542 While initiatives at the forefront of online teaching and learning were pushing  
543 innovative pedagogical solutions to the challenges of fostering online interaction, a  
544 new format of online teaching, Massive Open Online Courses (MOOCs), came to  
545 the scene in the early 2010s. MOOCs gained significant attention with promises to  
546 provide free education to large numbers of students. In 2014, the term LMOOC was  
547 coined to refer to MOOCs in language education [61]. While MOOCs failed to be  
548 as open as initially promised and acquired a more commercial focus as a student  
549 recruitment strategy, they did bring about a wealth of studies on elements of online  
550 language learning such as motivation [9], flipped learning [85] or interaction [62, 79]  
551 among others, and they gave impetus to the use of video for online instruction [65].  
552 However, there is also a concern about the quality of the pedagogical design ([45],  
553 p. 4) and the lack of interaction and collaboration in environments with large numbers  
554 of learners. In particular, the integration of speaking interaction activities is missing  
555 with a few exceptions (see above description of UOC's *tandemMOOC*, Appel and  
556 Pujolà [6]).

557 The evolution of the COVID-19 pandemic and the gradual opening of campuses  
558 after total lockdown brought to the forefront the so-called Hyflex (hybrid flexible)

559 instruction, consisting of classes administered simultaneously to students present in  
560 the classroom and students connected online through the livestreaming of the class-  
561 room session. Hyflex instruction has existed before COVID-19, ever since apt VCS  
562 (video conferencing) technologies have been available. Leijon and Lundgren [56],  
563 just before the pandemic, present a study of hyflex instruction where they focus on  
564 the different spaces that get activated (physical, representational and interactional)  
565 and describe different teacher strategies for coping with the hyflex classroom—  
566 some more successful than others, as teachers can experience constrained mobility  
567 in the classroom (because of camera and microphone settings), disconnection with  
568 the online students and a general loss of control, as some functions normally get  
569 delegated to a facilitator (a supporting teacher or student) who takes care of camera  
570 settings, administers the chat and, in general, establishes a link between the class-  
571 room and the online participants. Studies of hyflex instruction in higher education  
572 during the pandemic are starting to emerge (e.g., [14, 51]) and more will surely follow.  
573 Bogatyrets [14] presents a very positive evaluation of hyflex and focuses on the bene-  
574 fits of this type of instruction for the students, allowing them flexibility to choose  
575 the kind of environment they feel comfortable with in order to manage their risk  
576 tolerance. She also highlights the importance of an instruction design that favours  
577 the integration of both types of participants, for example through group projects  
578 where the students are grouped across their attendance modalities, preventing strat-  
579 ification between in-person and online learners. Explicitly teaching about group  
580 dynamics, problem-solving and project management are also presented as crucial  
581 strategies to make hyflex more effective. Kohnke and Moorhouse [51] focus on  
582 five themes that emerge from their study: communication challenges, particularly  
583 across attendance modalities, flexibility and return to normalcy as positive elements  
584 (compared to full online instruction); ownership of own learning and being actively  
585 involved; discussions of the different video conferencing platforms and the impor-  
586 tance of tools allowing collaborative activities; and motivation for hyflex in the future  
587 (characterized by mixed feelings).

588 In the context of the two universities that we are discussing in this article, hyflex  
589 instruction became a reality for the first time ever during the second half of 2020 at  
590 some of the language studies at AU. At this point in time, the campus was partially  
591 open for face-to-face teaching, but the requirement of 2-m distance between partici-  
592 pants meant that the classrooms originally assigned for a given class could not contain  
593 all the students at the same time. A shift system was therefore adopted to give every-  
594 body the possibility to alternate between face to face and online participation. Apart  
595 from this very systematized alternation of participants, the hyflex modality proved  
596 useful in a more informal fashion in the sense that it allowed students who found them-  
597 selves in self-isolation, either because they presented COVID symptoms, were tested  
598 positive, or had been in contact with infected people, to participate online instead  
599 of missing instruction. Evaluations from students and teachers were not particularly  
600 enthusiastic of hyflex, and with the full reopening of campus and the upheaval of  
601 restrictions in august 2021, hyflex is practiced only sporadically for students who  
602 are sick or for some reason have a lower threshold of risk-tolerance. We believe  
603 that, in the future, it might become relevant to reactivate hyflex, but it might require



604 AU to invest in more suitable technology, equipping all classrooms with VCS facil-  
 605 ities. While digital tools can act as channels for delivery, they can create the risk of  
 606 perpetuating limitations in brick-and-mortar classrooms if becoming too closed to  
 607 the outer world, to potential interlocutors and to the newest technological develop-  
 608 ments, a problem in some LMS platforms that tend to put up a digital wall around  
 609 the members of a higher education institution. The challenge is to open these spaces  
 610 while still facilitating students building their own PLE and communicating with the  
 611 outer world, thus supporting students in becoming global citizens.

## 612 **5 Imagining the Future: Challenges, Drivers, Obstacles,** 613 **and Opportunities**

614 In the aftermath of the COVID-pandemic, as universities are slowly opening their  
 615 doors to face-to face teaching again, a new expression affecting all aspects of our lives  
 616 has become part of our day-to-day conversations: the “new normality”. There seems  
 617 to be a general agreement that even if we are going back to normal, this normal  
 618 will be changed, and language teaching will not be an exception. Even the most  
 619 resistant-to-technology students and teachers have now experienced online teaching.  
 620 It is true that remote emergency teaching was sudden, was short of resources and  
 621 training and was indeed impregnated with trauma, but lessons can be learnt and the  
 622 path to facilitating the normalization of CALL and the consolidation of the use of  
 623 technologies and pedagogies that have been “incubated” and developed for the past  
 624 20/30 years has been set. While universities will regain the pulse of student crowds  
 625 on campus, technology will be more present in the classrooms, and blended, hybrid  
 626 and online programmes will coexist.

627 During the COVID-19 lockdown, virtual exchange was in high demand. This,  
 628 coupled with the growing interest in the past years reflected in numerous initiatives  
 629 and European projects (e.g., Unicollaboration or Evolve) and collections of publi-  
 630 cations (e.g., [31, 72]), means that the ground is ready for virtual exchange to take  
 631 the much needed step of normalization, being streamlined and fully integrated into  
 632 language programmes in higher education. Some of the challenges that are being  
 633 faced are how to scale up virtual exchange and give credit for student work in this  
 634 context.

635 In relation to language technologies as partners in cognition, we can envisage that  
 636 their use will grow rather than decrease, and that new technologies will constantly  
 637 present new affordances for language performance and thereby pose new challenges  
 638 regarding how to adapt them in learning contexts in ways that promote rather than  
 639 deter learning. At the same time, their presence and role in examination contexts will  
 640 need to be revised in order for exam tasks to reflect real-life language use without  
 641 losing their validity.

642 There are many exciting new venues of research to enhance online instruction,  
 643 from the use of robots referred to as RALL—Robot assisted language learning—to

644 provide instant and contextualized support to learners interacting with course mate-  
645 rials, to the application of Augmented reality /Virtual reality to materials that can  
646 provide learning experiences linked to emotions that can consolidate this learning.  
647 It will be possible to acquire sensitivity to cultural differences, pragmatic strate-  
648 gies, and understanding of other cultures through experience in this kind of environ-  
649 nment. The inclusion of learning analytics technologies in learning environments is  
650 also yielding a wealth of new information that is leading to a better and more in-depth  
651 understanding of online learners' experience in these environments.

652 Blended and online learning will be increasingly present, although hyflex learning  
653 poses a number of challenges that have still not been resolved. The threat of possible  
654 future pandemic outbreaks, paired with the normalization of telework, which might  
655 mean a higher spread of population in territories, makes it likely that the need for  
656 hyflex will remain if not increase, so solutions, both technological and pedagogical,  
657 will be needed for the successful collaboration of in-classroom and online students.

658 Related to instruction, there is hope that teacher training will take new impetus, the  
659 seeds of which were already being laid right before the pandemic with a focus on the  
660 wellbeing of teachers in light of their new roles in online and blended instruction [40,  
661 64]. The area of emotions in language learning and teaching [77, 81], also surging in  
662 the past 10 years, can only be expected to keep growing after such traumatic times  
663 lived during the pandemic.

664 Up to the covid lockdown, a recurrent warning of risk in CALL was reinventing  
665 the wheel as new technologies were developed, falling into the pitfall of applying  
666 older pedagogies and dressing up restricted versions of CALL (in Bax's [8] words)  
667 with more visually appealing features and interfaces that, despite the new make-up,  
668 remain pedagogically restricted (see e.g. Pujolà et al. [76] for a study on the use of  
669 Genially for gamification falling back into Bax's definition of restricted CALL). The  
670 goal is to move one step beyond and stop thinking about how to use a new technology  
671 and instead adopt the mindset that technology will continue to develop and that our  
672 focus needs to shift back to pedagogy, as technology is part of our new normal.

673 At this point, what is probably the crucial question that can provoke a paradigm  
674 shift is how we can move the focus from thinking in terms of how technology can  
675 be used in language education to how technology has changed the way we use and  
676 learn languages. What does it mean to learn a second language in a world where  
677 technologies can translate text, correct our grammar errors when we write or convert  
678 speech to text and text to speech automatically? How do we define proficiency in  
679 a language when technology can do most of the job for us? The answers to these  
680 questions are key to defining how we shall examine and grade learners seeking for  
681 accreditation of their language competences. Even the long-standing definitions of  
682 second language versus foreign language have become obsolete, when it is possible  
683 to dive into another culture and language via online means from any location in the  
684 world and when the pairing of language and country becomes more and more a thing  
685 of the past.

686 Last but not least, while CALL will develop into new exciting areas and will  
687 continue to influence the future of face-to-face communication and education, the  
688 question is, perhaps, whether CALL is also becoming obsolete in the sense that

689 language education—and education in general—by default entails the use of tech-  
 690 nology. We are certain that CALL will have to better define itself in the future and  
 691 reimagine its place in education.

## 692 6 Conclusion

693 It is our belief that language education gets expanded and redefined by technology  
 694 and that it, thereby, also contributes to promoting the students' digital literacy and to  
 695 boosting their twenty-first century skills, including intercultural understanding, true  
 696 collaboration with others, risk-taking and higher order thinking.

697 We also believe that language education, with its long experience and pioneering  
 698 spirit for adapting and adopting current technologies, can play a key part in redefining  
 699 the role of technology in higher education at large, both by enlarging the context for  
 700 learning and by providing new tools that act as 'partners in cognition'. But language  
 701 education cannot do it alone: there is a need for strong alliances across disciplines  
 702 and 'epistemic cultures' [50].

703 We have also seen along the chapter that technology imposes some challenges on  
 704 language education. For example, we need to rethink learning goals and examination  
 705 forms in the light of emerging changes in language technologies and practices. This  
 706 means, on the one hand, integrating a more thorough understanding of technology  
 707 for language learners and teachers, but possibly, on the other, identifying practices  
 708 that can be 'technology-free' and only rely on the student's own memory, voice, and  
 709 body language. Although we have earlier mentioned affordances of technology in  
 710 connection with inclusiveness and connectivity, there are still some pressing issues  
 711 regarding privacy, plagiarism, and the slow progress of open source, which poten-  
 712 tially undermine these ideals. The Internet is getting increasingly closed with the  
 713 emergence of premium versions, and not all countries have the access to internet that  
 714 is necessary for active and equal participation.

715 **Acknowledgements** We would like to thank our colleague Francesco Caviglia for our online  
 716 discussions and for sharing with us his insightful ideas.

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