

# Contemporary challenges in foreign language learning in higher education: rethinking the interactions between digital tools, cultural intelligence and cognitive load for a balanced active pedagogy.

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1           Contemporary challenges in foreign language learning in higher education: rethinking the  
2           interactions between digital tools, cultural intelligence and cognitive load for a balanced active  
3           pedagogy.

#### 4    *Abstract*

5    The use of digital tools in foreign language learning in higher education raises many pedagogical  
6    challenges, particularly in terms of the skills to be developed, vital for society and the labour world, while  
7    simultaneously managing the cognitive load of students. Based on the results of experiments carried out  
8    with undergraduate Media Studies students at the *Escola Superior de Educação de Viseu* (Portugal), the  
9    paper questions the effects of applying active pedagogies using digital tools upon the acquisition of these  
10   competences, with particular focus on cultural intelligence, while keeping students' cognitive load  
11   balanced. Results show that pedagogical activation can favour the development of diverse competences  
12   and cognitive processes, but presents risks, namely overload in the case of poorly planned activities. The  
13   article aims to contribute to the design of balanced, rich and cognitively sustainable pedagogical devices,  
14   contributing to an active pedagogy with the integration of the digital tools.

15   Keywords: active pedagogies, foreign languages for specific purposes, digital environments, cognitive  
16   load, diversified competences.

#### 17   **Introduction:**

18   One of the missions of higher education (HE) is to train excellent professionals and  
19   responsible, conscientious citizens, thereby contributing to the social, economic and  
20   sustainable development of the country (United Nations, 2015). HE is a strategic space  
21   for developing key competences for professional integration and career progression  
22   (Eurydice, 2025), and for stimulating critical, reflective thinking, innovation, promotion  
23   of sustainable practices and civic participation. It prepares professionals to face global  
24   challenges and seeks to build a just and cohesive society respecting cultural and social  
25   diversity (van Laar et al., 2020).

26 In view of today's growing internationalisation, mastering foreign languages (FL) has  
27 become a strategic issue for students, as well as for higher education institutions and  
28 employers (Costa Lopes, 2018). While the evolution of active pedagogical practices and  
29 technology is radically transforming <sup>17</sup>teaching and learning methods (Carvalho et al.,  
30 2021), the ready availability of digital tools on the internet has also exploded. These  
31 techno-pedagogical environments provide an extraordinary opportunity to develop  
32 complex skills, such as cultural intelligence (CI), which is essential in a globalised  
33 intercultural context (Byram, 1997).

34 Digital resources allow for a richer and more diverse exposure to content and realities  
35 within the classroom, but they can also increase mental fatigue, known as cognitive load  
36 (CL) due to the simultaneous mobilisation of concentration, memory, technical skills,  
37 etc. Poorly managed activities will constitute a serious obstacle to learning, particularly  
38 the development of complex skills (Erdogmus & Kurt, 2024).

39 The question of how to promote learning is increasingly topical in this reality: what will  
40 be asked or suggested of students for more active, student-centered learning? To what  
41 extent do digital tools <sup>13</sup>support the development of various competences (hard and soft  
42 skills) without generating a CL in students? Teachers face several challenges, questions  
43 and problems on this journey.

44 In this context, the article combines theoretical contributions with empirical studies  
45 carried out at the *Escola Superior de Educação de Viseu* (ESEV, Portugal) in recent  
46 academic years. The aim is twofold. On the one hand, it aims to analyse the effect, from  
47 both students' and teachers' point of view, of the reasonable use of active pedagogical  
48 strategies, namely digital tools, towards the enhancement of FL competence within the  
49 scope of learning Languages for Specific Purposes at HE level. On the other hand, it

50 outlines pedagogical proposals that make it possible to manage work assignments more  
51 effectively in and out of the classroom.

52 The first hypothesis is that implementing active pedagogy strategies, with diversified  
53 activities, using digital tools, makes it possible to develop a variety of skills by students,  
54 particularly CI. The second is that following an appropriate work plan in this context  
55 facilitates the learning of FL, ensuring a balance between the acquisition of knowledge  
56 and skills and CL, thus maintaining motivation of students and teachers alike.

57 After clarifying the competences that can be developed throughout the FL learning  
58 process, we detail the concept of CL within the context of pedagogical activation and  
59 the use of digital tools. Grounded in experimental processes, we outline the paths  
60 followed, with clues for planning activities based on active pedagogies, focusing on the  
61 advantages and difficulties identified in the form of a SWOT analysis. Finally, we  
62 discuss the hypotheses.

### 63 **Evolution of competences developed in the learning of FL in HE; the CI:**

64 The evolution of FL learning in HE reflects a complex interaction brought about by  
65 social, professional, pedagogical and technological progress. The integration of  
66 innovative pedagogies, focus on communication for specific purposes, use of bridge  
67 technologies and social and professional challenges are all factors in the paradigm shift  
68 within the research and field work pertaining to FL teaching and learning.

69 Globalisation has boosted the acquisition of language skills, as shown by the update  
70 the Common European Framework of References for Languages (CEFR) (Council of  
71 Europe, 2021). By offering a structured, flexibly applicable and universally recognised  
72 document for assessing and promoting FL, the CEFR focuses on communicative  
73 competences for more effective written and oral communication in real-life contexts and

74 more autonomy on the part of the student, who must achieve goals. One limitation is  
75 due to the wide cultural variation among the student population, levels set being thus  
76 subjective <sup>16</sup> depending on the cultural and educational context in question.

77 FL learning in HE allows for a <sup>2</sup> wide range of skills to be developed, in addition to  
78 language skills, in the cognitive, social (e.g. behavioural, emotional) and cultural  
79 dimensions, which are valued in the labour market (Schwab & Zahidi, 2020). At the  
80 linguistic level, the skills are the well-known ones of oral and written comprehension  
81 and production. Concerning cognitive and metacognitive skills, we can highlight the  
82 development of critical thinking, ability to learn how to learn, acquisition of autonomy  
83 and effective problem-solving competences. Regarding social skills, learning a language  
84 facilitates interaction between people, also from various backgrounds and in a variety of  
85 contexts, for example, during collaborative work. Social interaction also involves  
86 developing empathy and adaptability. Thus, we address aspects of culture and  
87 interculturality. HE should reinforce cultural awareness and sensitivity, as well as  
88 flexibility and adaptation to multicultural environments.

89 CI refers to understanding, respecting and adapting to different cultures and  
90 multicultural environments (Earley & Ang, 2003). It involves various competences,  
91 such as cultural awareness and empathy, intercultural communication, cultural curiosity  
92 and sensitivity, flexibility and adaptability, as mentioned above. The components of Ang  
93 and Van Dyne's model (Ang et al., 2007) are metacognitive (awareness of and reflection  
94 on one's own process of cultural adaptation), cognitive (knowledge about cultures),  
95 motivational (interest in and perseverance towards acceptance of other cultures) and  
96 behavioural (adoption of appropriate behaviour in the presence of other cultures).  
97 Reflective observation during international missions would be reinforced by cognitive  
98 and metacognitive CI. CI improves linguistic understanding, avoids stereotyping and

99 culture clashes, encourages tolerance and empathy and develops greater communicative  
100 competence.

101 In addition to technological skills using digital tools and the boost to creativity favoured  
102 by the extraordinary functionalities of platforms, not necessarily dedicated to education,  
103 the learning of FL makes it possible to acquire competitive skills for the labour market  
104 and society in general (Delplancq et al., 2024a).

#### 105 **Active pedagogies, digital tools and CL:**

106 The key principle of active pedagogies is to <sup>1</sup>place the student at the centre of the  
107 <sup>11</sup>learning process, aiming to develop higher <sup>11</sup>cognitive skills, such as critical thinking,  
108 <sup>3</sup>creativity and collaboration. <sup>3</sup>Students play an active role in their progress (Baepler et al.,  
109 2023). Well-known examples are <sup>6</sup>problem-based learning, project-based learning, the  
110 flipped classroom, peer learning, enquiry learning, gamification, etc. Digital tools can  
111 become allies, but also enemies, when improperly regulated (Delplancq et al., 2024a).

112 Constructivist and socio-constructivist theories of learning represent a solid basis for  
113 understanding and developing active, student-centered pedagogies, particularly in the  
114 context of FL learning, CI and critical literacy (Kharroubi & ElMediouni, 2024), besides  
115 underpinning the importance of collaboration, scaffolding, and situated learning.  
116 According to Mezirow (2018), transformative learning is the process through which  
117 individuals critically examine assumptions, beliefs, and experiences, likely leading the  
118 way to a fundamental shift in their worldview. This is particularly relevant in FL  
119 education where learners encounter not only new linguistic structures but also  
120 unfamiliar cultural perspectives and values. It highlights the role of reflexive thinking in  
121 reshaping perspectives, a key aspect of CI development. The framework proposed by  
122 Martínez-Bravo et al. (2022) offers a subtle and pedagogically relevant approach to

123 understanding digital literacies not just as technical competencies, but as complex,  
124 socially placed practices that intersect with identity, communication, ethics, and power.  
125 Digital literacy must be understood as multidimensional, requiring not only operational  
126 skills (how to use digital tools), but also critical, communicative, and creative capacities  
127 that allow learners to involve themselves responsibly and reflectively in digital  
128 environments. Baybayon (2021) examines how the <sup>5</sup> Universal Design for Learning  
129 (UDL) framework has been used in empirical studies of teaching and learning and  
130 offers tools for addressing the variability of student engagement and ensuring inclusive  
131 access to learning experiences.

132 Digital technologies are varied and often used together. They can facilitate or hinder the  
133 development of educational activities. Learning management platforms, interactive  
134 applications, multimedia, simulation or gamification environments provide for  
135 classroom openness and can encourage student motivation and commitment. However,  
136 overuse or weakness of reasonable programming can represent an overload concerning  
137 students' cognition, favour counter productiveness, lack of interest and student fatigue  
138 (Beetham & Sharpe, 2019; Mayer, 2019).

<sup>8</sup>  
139 Bearing on John Sweller's Cognitive Load Theory (CLT) (1988), the CL approach finds  
140 that memory and concentration capacity are limited, requiring that the learning process  
141 avoid overload (Sweller & Chandler, 1991). The current challenge in HE learning is to  
142 integrate digital tools into active pedagogies, reconciling the development of effective  
143 competences without unduly increasing the extrinsic load, the way in which information  
144 is presented (Javed, 2025). The intrinsic load, the difficulty inherent in the content, must  
145 be adapted to the level of the audience and the objectives of the training programmes.  
146 The strategies used should also help maximise the effort devoted to learning (germinal

147 load). CL, when well-managed, enhances learning; otherwise, generates frustration,  
148 fatigue and lack of interest.

149 Various experiments held in recent years at ESEV have made it possible to improve the  
150 methodology and working strategies.

#### 151 **Methodology:**

##### 152 **Context:**

153 The *Escola Superior de Educação de Viseu* (ESEV), within the Viseu Polytechnic  
154 Institute, provides undergraduate and graduate education in the scope of Portugal's  
155 polytechnic system. This system relies strongly on the practical application of  
156 knowledge, problem-solving, and professionalization (*Diário da República*). The ESEV  
157 is equipped with modern educational infrastructures, including wireless connectivity,  
158 multimedia-equipped classrooms, and the Moodle Learning Management System. The  
159 school fosters internationalization through mobility programs and ensures effective  
160 support to students, towards their successful integration.

161 The bachelor's degree in media studies was the course chosen for pedagogical  
162 innovation experiments due to its interdisciplinary and professionally oriented  
163 curriculum. The course study plan includes modules in French and English,  
164 photography, digital environments, and intercultural education, making it a suitable  
165 context for the implementation of new learning methodologies aimed at developing  
166 transversal competencies relevant for future media professionals. The groups  
167 participating in the experiments consisted of students enrolled in a 3-year bachelor's  
168 degree course, the 3rd year partly dedicated to a professional internship.

##### 169 **Methodological Framework:**

170 The research and experimentation tasks described in this paper were carried out under  
171 the JASM Project (Lopes et al., 2023), which focused on developing CI through project-  
172 based and research-driven learning. The project involved 25 second-year students  
173 enrolled in the Media Studies degree. These students participated in a semester-long  
174 initiative that required direct interaction with migrant communities in Viseu.

175 The methodology adopted was based on active learning principles and included several  
176 key components: multidisciplinary team teaching, combining language instruction with  
177 technical skills such as photography and digital storytelling; group-based project work  
178 (each group was responsible for conducting interviews with migrants, gathering cultural  
179 narratives, and creating a digital story centered on a traditional object or practice); <sup>1</sup> use  
180 of the Korsakow platform, which facilitated the creation of non-linear digital narratives  
181 and allowed for the enhancement of students' engagement with multimedia content  
182 production. Public dissemination, besides paper publications, was also accomplished  
183 through an exhibition open to the local community, seen as a means to foster civic  
184 engagement and intercultural dialogue.

185 With this approach, it was intended to combine FL digital literacy, cultural empathy, and  
186 creative storytelling.

#### 187 **Analytical Dimensions:**

188 The evaluation was conducted <sup>9</sup> using a mixed-methods approach. Semi-structured  
189 surveys and course evaluations allowed for an understanding of student perceptions,  
190 levels of engagement, and self-reported skills development. The qualitative data from  
191 interviews, reflections, and project outcomes have provided deeper insight into students'  
192 development of CI, including awareness, empathy, intercultural communication,

193 curiosity, and adaptability. The CEFR-aligned language assessments showed progress in  
194 French and English proficiency.

195 The data collected indicated high levels of motivation, creativity, collaboration, and an  
196 enhanced ability to appropriately handle multicultural contexts. Students developed not  
197 only language skills but also critical 21st-century competencies, including autonomy,  
198 problem-solving, and digital storytelling abilities.

#### 199 **Action Research and Iterative Design:**

200 Building on the initial success, the teaching team expanded the model through action  
201 research (Delplancq et al., 2023). The iterative cycle involved a design of new  
202 pedagogical tools in line with <sup>7</sup>SMART KPIs (Specific, Measurable, Achievable,  
203 Relevant, Time-bound), the introduction of mobile-assisted language learning (MALL)  
204 (Hoi, 2020), flipped classroom techniques, peer assessment, and gamification. The goal  
205 was to encourage students to co-create content, participate in structured peer review, and  
206 engage in playful learning tasks such as escape games, quizzes, mind maps, mood  
207 boards, and digital debates. In this way, it was intended to embed CI and critical literacy  
208 into both the content and process of FL learning, using digital tools as mediators of  
209 communication and expression (Delplancq et al., 2024b).

#### 210 **Evaluation and Outcomes:**

211 Assessment was thoroughly redesigned to match the new educational framework.  
212 Ongoing evaluation took the place of conventional tests. The assessment focused on  
213 both group and personal contributions, communication abilities in interpersonal and  
214 intercultural contexts, creative interaction with material resources, and continuous  
215 development in linguistic and cultural skills.

216 Every student progressed to, at least, the next CEFR level in their FL skills by the  
217 semester's end. Nonetheless, a small group were shown to be uncomfortable regarding  
218 the unconventional format, mentioning a desire for tasks with clear boundaries and  
219 expectations linked to traditional teaching and assessment approaches. This feedback  
220 emphasizes the need to balance innovation and flexibility (by using adaptive pacing,  
221 incorporating low-stakes tasks, and facilitating structured collective reflection) to reduce  
222 cognitive overload and promote inclusive learning experiences (Delplancq et al., 2025).

#### 223 **Discussion:**

224 Fostering learner autonomy is essential in 21st-century education. However, autonomy  
225 must rest upon structured guidance to ensure students can organize their learning and  
226 engage meaningfully with the learning process. Encouraging students to step out of their  
227 comfort zones, to face real-world problems, embrace failure and ambiguity, is a  
228 pedagogical necessity but not always welcomed. Similarly, on the teaching side,  
229 promoting autonomy while designing collaborative, inclusive, and personalized learning  
230 paths presents significant challenges.

231 Student attitudes toward active pedagogies and digital tools in FL learning vary widely,  
232 not only within the same class groups and colleagues but also across academic years  
233 and among teaching staff. These attitudes are strongly shaped by former educational  
234 experiences, digital literacy, institutional culture, and the degree of support provided.  
235 While some students show motivation, commitment, creativity, and a willingness to  
236 collaborate, others display, absent-mindedness, frustration, resistance to change, or  
237 over-reliance on technology. A subset of learners is beginning to explore AI tools, but  
238 often with limited critical awareness, skipping essential processes such as reading  
239 instructions carefully or conducting research.

240 These mixed reactions reveal a deeper tension: the opportunities of active and digital  
241 pedagogy are evident (authentic skill development, inclusive group work, and the  
242 acknowledgment of student output) yet they coexist with risks, including digital  
243 inequality, emotional isolation, superficial engagement, and cognitive overload.  
244 Stereotypes and negative emotions linked to past experiences with language learning  
245 can further worsen resistance. Additionally, fatigue resulting from imbalanced  
246 approaches to critical literacy, especially when unsupported by emotional assistance or  
247 reflective dialogue, can undermine student engagement.

248 Despite these challenges, FL learning remains a powerful context for developing the CI,  
249 a key transversal skill in today's interconnected labor market and society. Carefully  
250 designed tasks such as comparing media representations of global issues, analysing  
251 intercultural misunderstandings, conducting interviews, or reflecting on cultural  
252 practices provide rich opportunities for CI development. These activities also support  
253 other key competencies such as empathy, adaptability, communication, and critical  
254 thinking.

255 To boost the potential of this pedagogical model, teachers must continuously negotiate  
256 pedagogical and scientific goals with students, in line with authentic, achievable  
257 challenges. This requires detailed activity planning (including assessment strategies and  
258 real-world tasks) while managing the cognitive and emotional demands placed on  
259 learners. Positive communication strategies (e.g., active listening, constructive  
260 feedback, collaborative dialogue) can support this process and foster a supportive  
261 learning climate.

262 **Conclusion:**

263 The implementation of active pedagogies supported by digital resources presents  
264 meaningful opportunities to develop complex competencies such as CI and critical  
265 literacy within the FL classroom. However, the success of such approaches depends on  
266 the pedagogical design and the guidance and feedback provided by teachers. These  
267 factors are to be seen as cornerstones for helping students navigate unfamiliar,  
268 interdisciplinary, and often demanding learning landscapes.

269 To encourage and keep up student motivation, engagement, and cognitive focus, it is  
270 essential to design progressive and well supported activities, alternating with moments  
271 of peer interaction, collective reflection, and shared meaning-making. These shared  
272 pedagogical experiences contribute not only to deeper learning but also to the  
273 development of interpersonal and intercultural communication skills.

274 Moreover, the intentional and wise selection of digital tools is critical. Choosing  
275 accessible and pedagogically relevant technologies helps minimize unnecessary  
276 extrinsic CL, allowing learners to concentrate on language acquisition, intercultural  
277 understanding, and content creation rather than on technical mastery. A balanced,  
278 integrated approach (that combines digital literacies, FL learning, and transversal  
279 competencies) is therefore key to achieving lasting and transferable learning outcomes.

280 Looking ahead, future research should further explore the measurement and  
281 development of CI and CL in this context. The application of the CI Scale (Ang et al.,  
282 2015) and emerging tools for assessing CL (e.g., Krieglstein et al., 2023) may provide  
283 valuable insights into the durability and transferability of the skills acquired.

284 Longitudinal studies could also assess how such competencies evolve over time and  
285 across diverse cultural and educational settings.

286 Ultimately, the combination between active pedagogies, digital resources, and FL  
287 education, when guided by inclusive frameworks such as UDL and informed by

288 empirical evidence, has the potential to stimulate learners who are not only  
289 linguistically competent but also digitally literate, interculturally aware, and critically  
290 engaged global citizens.

291 **References:**

- 292 Ang, S., Van Dyne, L., Koh, C., Ng, K., Templer, K., Tay, C., & Chandrasekar, N.  
293 (2007). Cultural intelligence: Its measurement and effects on cultural judgment and  
294 decision making, cultural adaptation and task performance. *Management and*  
295 *Organization Review*, 3(3), 335-371.
- 296 Ang, S., Van Dyne, L., Rockstuhl, T., Gelfand, M. J., Chiu, C. Y., & Hong, Y. Y. (2015).  
297 Cultural intelligence. *Handbook of Advances in Culture and Psychology*, 5, 273-324.
- 298 Baepler, P., Walker, J. D., Brooks, D. C., Saichaie, K., & Petersen, C. I. (2023). *A guide*  
299 *to teaching in the active learning classroom: History, research, and practice*. Routledge.
- 300 Baybayon, G. (2021). The use of Universal Design for Learning (UDL) framework in  
301 teaching and learning: A meta-analysis. *Academia letters*, 692, 1-7.
- 302 Beetham, H., & Sharpe, R. (Eds.). (2019). *Rethinking pedagogy for a digital age:*  
303 *Principles and practices of design*. Routledge.
- 304 Byram, M. (1997). Cultural awareness as vocabulary learning. *Language Learning*  
305 *Journal*, 16(1), 51-57.
- 306 Carvalho, A., Teixeira, S. J., Olim, L., Campanella, S. D., & Costa, T. (2021).  
307 Pedagogical innovation in higher education and active learning methodologies - a case  
308 study. *Education+ Training*, 63(2), 195-213.
- 309 Costa Lopes, A. M., Oliveira, A., Amante, F., Oliveira, I., Abrantes, J., Jesus Pato, M.  
310 L., Amaral, O., Relvas, S., Fidalgo, S., & Delplancq, V. (2018). Foreign languages and  
311 employability: A complex relationship. Case study in the region of Viseu (Portugal).  
312 *Proceedings of Edulearn18*, 0614-0618.

313 Council of Europe (2021). *The common European framework of reference for*  
314 *languages: Learning, teaching, assessment* - Companion Volume with New Descriptors.  
315 Strasbourg: CoE.

316 Delplancq, V., Costa Lopes, A. M., Pereira, J., & Fidalgo, S. (2023). Active foreign  
317 language learning practices in higher education: The perspectives of the  
318 actors. *Education Applications & Developments VIII*, 208-217.

319 Delplancq, V., Costa, A. M., Pereira, J., Gillain, R., & Fidalgo, S. (2024a). Using digital  
320 tools to innovate in higher education: From icebreakers to various skills development.  
321 In K. Prager & N. Bilge (Eds.), *Digital literacy at the intersection of equity, inclusion,*  
322 *and technology* (pp. 198-223). IGI Global.

323 Delplancq, V., Costa, A. M., Oliveira, I., Martins, J., Pereira, J., Martin, J. A. S. C.,  
324 Casañ-Pitarch, R., Gillain, R., Amante, S., & Fidalgo, S. (2024b). Digital tools for  
325 foreign language learning in higher education in Portugal: Immeasurable opportunities  
326 amidst multiple challenges. *ICERI2024 Proceedings*, 8165-8171.

327 Delplancq, V., Costa, A. M., Pereira, J., Martin, J. A. S. C., Casañ-Pitarch, R., Gillain  
328 R., & Fidalgo, S. (2025). The evolution of foreign language learning in higher  
329 education: a risky approach. *Proceedings of END25*, 2, 416-420.

330 Diário da Republica. Lexionário. Instituto Politécnico  
331 <https://diariodarepublica.pt/dr/lexionario/termo/instituto-politecnico>

332 Erdoğan, Y. K., & Kurt, A. A. (2024). Digital game-based learning: Pedagogical agent  
333 and feedback types on achievement, flow experience, and cognitive load. *Education and*  
334 *Information Technologies*, 29(10), 12943-12968.

335 Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across*  
336 *cultures*. Stanford University Press.

337 Eurydice (2025). *Portugal. Ensino superior*. [https://eurydice.eacea.ec.europa.eu/pt-](https://eurydice.eacea.ec.europa.eu/pt-pt/eurypedia/portugal/ensino-superior)  
 338 [pt/eurypedia/portugal/ensino-superior](https://eurydice.eacea.ec.europa.eu/pt-pt/eurypedia/portugal/ensino-superior)  
 339 Hoi, V. N. (2020). Understanding higher education learners' acceptance and use of  
 340 mobile devices for language learning: A Rasch-based path modeling approach.  
 341 *Computers and Education*, 146.  
 342 Javed, F. (2025). Innovative pedagogies for a digital world. In D. L. Miltiadis, P.  
 343 Ordonez, A. Alkhalidi & A. C. Serban (Eds.), *Innovation management for a resilient*  
 344 *digital economy* (pp. 231-260). IGI Global Scientific Publishing.  
 345 Kharroubi, S., & ElMediouni, A. (2024). Conceptual review: cultivating learner  
 346 autonomy through self-directed learning & self-regulated learning: A socio-  
 347 constructivist exploration. *International Journal of Language and Literary Studies*, 6(2),  
 348 276-296.  
 349 Krieglstein, F., Beege, M., Rey, G. D., Sanchez-Stockhammer, C., & Schneider, S.  
 350 (2023). Development and validation of a theory-based questionnaire to measure  
 351 different types of cognitive load. *Educational Psychology Review*, 35(1), 9.  
 352 Lopes, A. C., Costa, C. A., Coutinho, E., Oliveira, I., Pereira, J., Gillain, R., Amante, S.,  
 353 Fidalgo, S., Relvas, S., & Delplancq, V. (2023). Looking into foreign languages and  
 354 multimodal creativity as a tool for pedagogical innovation in higher education: The  
 355 JASM project - open window onto the world. In A. Garcés-Manzanera, & M. E. C.  
 356 García (Eds.), *New approaches to the investigation of language teaching and*  
 357 *literature* (pp. 141-153). IGI Global Scientific Publishing.  
 358 Martínez-Bravo, M. C., Chalezquer, C. S., & Serrano-Puche, J. (2022). Dimensions of  
 359 digital literacy in the 21st century competency frameworks. *Sustainability*, 14(3), 1867.  
 360 <https://doi.org/10.3390/su14031867>

361 Mayer, R. E. (2019). What do teachers and administrators need to know about  
362 multimedia learning theory. *Multimedia learning theory: Preparing for the new*  
363 *generation of students*, 85, 18-30.

364 Mezirow, J. (2018). Transformative learning theory. In K. Illeris (Ed.), *Contemporary*  
365 *theories of learning* (2nd ed., pp. 114-128). Routledge.

366 United Nations (2015). *Transforming our world: The 2030 agenda for sustainable*  
367 *development*. <https://sdgs.un.org/>

368 van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2020).  
369 Determinants of 21st-century skills and 21st-century digital skills for workers: A  
370 systematic literature review. *SAGE Open*, 10(1), 1-14.

371 Schwab, K., & Zahidi, S. (2020). *The future of jobs report 2020*. World Economic  
372 Forum.

373 Sweller, J. (1991). Cognitive load during problem solving: Effects on learning.  
374 *Cognitive Science* 12, 257-285.

375 Sweller, J., & Chandler, P. (1991). Evidence for cognitive load theory. *Cognition and*  
376 *Instruction*, 8(4), 351-362.

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