HOW TO TAILOR *TELL* TOOLS FOR OLDER L2 LEARNERS

CÓMO ADAPTAR LAS HERRAMIENTAS TECNOLÓGICAS PARA ESTUDIANTES MAYORES DE LENGUA DOS

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Nowadays, many second language (L2) courses comprise a mix of online learning and face-to-face activities. As a result, this incorporation of blended learning and class instruction has allowed L2 students to learn more autonomously, become more engaged with the language learning process and achieve better results. However, blended L2 instructional strategies are mostly intended for young and traditional college-age students without considering the older learners. This article investigates the suitability of the blended L2 learning format for this latter student population and seeks to establish guidelines for the design of an L2 language course well adapted to the specific weaknesses and strengths of older adults. To this end, the early effects of aging on L2 acquisition and cognitive processes are first reviewed. Next, good practices in the use of technology-enhanced language learning (TELL) tools with older students are discussed. Finally, recommendations for blended L2 course design are provided.

Key words*: blended learning, cognition, older adult learners, second language acquisition, technology-enhanced language learning*

Hoy por hoy, muchos cursos del segundo idioma incluyen una mezcla de actividades en línea y presenciales. Como resultado, la inclusión de aprendizaje mixto y la formación en el entorno de clase han permitido a los estudiantes de un segundo idioma aprender de forma más autónoma, estar más motivados con su proceso de aprendizaje y obtener mejores resultados. Sin embargo, las metodologías de segunda lengua tradicionalmente se han dirigido a la enseñanza de estudiantes más jóvenes y a los universitarios sin tener en cuenta a los estudiantes de mayor edad. Este artículo investiga la adecuación del modelo mixto para este grupo de estudiantes y busca establecer recomendaciones para el diseño de un curso de segunda lengua adaptado a las necesidades específicas de los alumnos de edad más avanzada. Con este propósito, se analizan los primeros signos que manifiestan el envejecimiento en la adquisición del segundo idioma así como en los procesos cognitivos. Luego, se discuten prácticas pedagógicas adecuadas con el uso de herramientas tecnológicas en el aprendizaje de lengua para los estudiantes de mayor edad. Finalmente, se concluye con recomendaciones para el diseño de cursos de segunda lengua con formato de aprendizaje mixto.

Palabras clave*: aprendizaje mixto, adquisición de una segunda lengua, aprendizaje de idioma con tecnología, cognición, estudiantes mayores*

1. Introduction

For the last twenty-five years, the use of computer-assisted technology has permeated the field of L2 acquisition and learning. Nowadays, supporting materials are usually accompanied by on-line platforms that allow instructors and students to combine a standard face-to-face environment with computer-mediated options, often referred to as blended instruction. Research has shown that such a format is beneficial to the students by allowing them to work more autonomously, be more focused and engaged, improve their motivation, provide them with better opportunities to master content, and enhance their performance (Ausburn, 2004; Fadde & Vu, 2014; Fox, Kwan, & Tsang, 2007; Harker & Koutsantoni, 2005; Larsen, 2012; Poon, 2013). To this day, most of the research and L2 instructional strategies on this topic have been dedicated to children and college-aged students. However, enrollment in institutions of higher education also comprises a significant number of students who don't fit these usual categories, as they may have delayed their education plans, already have found employment, and generally

exceed the age of 30 years (Choy, 2002; Provasnik & Planty, 2008). Accordingly, the question arises as to whether the use of L2 blended courses is in fact well adapted to the strengths and weaknesses of this older student population. Indeed, empirical evidence suggests that cognitive abilities gradually decline as early as 30 years old, a factor that is currently not integrated into the design of TELL tools (Cansino et al., 2013; Park et al., 1996). As a result, while some advantages of computed mediated instruction are clear, especially in the case of nontraditional students (such as the flexibility to study at virtually any place or time), the prevailing methods may in fact put the cohort of older students at a disadvantage (notwithstanding their gender and social background). With this in mind, the purpose of this paper is twofold: Firstly, to discuss the effect of aging on L2 learners in higher education, and secondly to provide guidelines for the design of an L2 blended language course for this population.

2. Influence of Aging on L2 Acquisition and Learning

It is widely accepted that, in a larger measure than in any other field of learning, the acquisition of a language depends critically on the age of the subject. Therefore, one could reasonably expect that the learning of an L2 by an older student population may be strongly conditioned by this factor. To clarify this issue, research findings on the effects of aging on L2 acquisition are reviewed in this section.

The dominant view on this topic is rooted in Chomsky's (1980) hypothesis that children enjoy the innate ability to acquire a first language through the use of an inherited language acquisition device (LAD) and exposure to the target language. According to this theory, this fact is made possible by an aptitude to access a set of principles universal to all languages, also denoted Universal Grammar (UG). A first essential assumption associated with this process is that it occurs as a natural developmental stage, in an implicit fashion that does not require a conscious effort from the learner. Another idea that is closely linked to this concept is that the learning of a first language (L1) may only happen within a certain period in life that may end at around puberty, an assumption that is referred to as the Critical Period Hypothesis or CPH (Penfield & Roberts, 1959; Lenneberg, 1967). While these concepts were developed with respect to L1 acquisition, they have exerted a strong influence on early theories of L2 learning,

especially with regard to the role of age. However, in contrast to these views, Bley-Vroman (1990) proposed a fundamental difference hypothesis (p. 23) stating that adult learners of an L2 may not rely upon the innate language learning abilities normally enjoyed at an earlier age, but must make use instead of two other resources, namely i) the preexisting knowledge of a first language that offers information about its general character and specific features, and ii) problem-solving abilities that make it possible to identify differences and similarities between the L1 and L2, and thus infer implications for the learning of the L2. As a result, while adults may not be able to learn an L2 in the same manner as children acquire an L1, they may still be able to attain a high degree of proficiency in the L2 under certain conditions, such as "effort, motivation, and the proper learning environment" (Bley-Vroman, 1990, p.44) as well as "having a high level of verbal abilities" (DeKeyser, 2000, p. 501). In addition, doubt has been cast on the significance or even existence of a critical period in L2 learning (White & Genesee, 1996; Bialystok, 1997), suggesting for instance that other reasons may account for a decline in L2 attainment with age, including physiological, cognitive and social factors (Hakuta, 2001). Still, the view that L2 acquisition depends on innate abilities has not been entirely discarded. For instance, according to White (2003): "Results from several experiments suggest that learners of a variety of L2s demonstrate unconscious knowledge of subtle distinctions that are unlikely to have come from the L2 input (including instruction) or from the L1, consistent with the claim that principles of UG constrain interlanguage grammars." (p. 56). However, this latter position does not preclude the notion that adult learners of an L2 make a much more extensive use of explicit than implicit mental processes. This fundamental shift has been emphasized by a number of second language acquisition researchers (Ellis, 1994, 2005; DeKeyser, 2003; DeKeyser & Larson-Hall, 2005) and is for instance supported by a comparison between the results of studies that, on the one hand, demonstrate a strong correlation between cognitive abilities and L2 achievement among adult learners (Sawyer & Ranta, 2001) and, on the other hand, fail to find a similar relationship among children (Harley & Hart, 1997). These views are congruous with the declarative/procedural memory model proposed within the framework of the neurocognitive theory of second language acquisition (Paradis, 2004; Ullman, 2004). According to this approach, memory functions used in language learning are divided into two distinct systems: The first one, denoted declarative memory "stores knowledge about facts and events" (Morgan Short & Ullman, 2012, p. 283) and is brought to mind

consciously, while the second one, referred to as procedural memory, relates to the "implicit learning and use of motor and cognitive skills" (Morgan Short & Ullman, 2012, p. 283) and is often equated to implicit memory, which "does not depend on conscious recollection" (Eysenck, 2001, p. 334). In a way similar to the semantic and episodic memory functions, studies have shown that the effectiveness of the declarative and procedural memory systems evolve differently with age, suggesting that adult L2 learners initially depend mostly on the former one to store information (Morgan Short & Ullman, 2012). All in all, there seems to be a general agreement in the literature that adults rely mainly on explicit rather than implicit learning mechanisms when acquiring an L2. Nevertheless, some research has pointed to specific conditions under which adult learners could gain from acquiring an L2 implicitly, namely that it may be more adapted to learning complex language systems and rules (Reber, 1993; Midford & Kirsner, 2005). Otherwise, another important aspect of L2 acquisition resides in the ability to convert the explicit knowledge learned through language instruction into an automatic use of the language. The question of how such an implicit knowledge may be derived from an explicit understanding of principles remains controversial. For one, Krashen (1985, 1994, 2003), who invoked the notions of learnt and acquired knowledge, was a strong proponent of a strict separation between these constructs and rejected the idea of an interplay between them. For another, Bialystok, who referred to the concept of control (1978, 1991), as well as Ellis in his weak interface model (1994) have allowed for such an interaction to occur under some well-defined conditions. Finally, the view that a strong interface makes it possible for implicit and explicit knowledge to be accessible to each other was first defended by Sharwood Smith (1981) and later by DeKeyser (1998). According to this latter perspective, the communication between these two forms of knowledge may be facilitated through practice (Anderson, 1983) and communication (DeKeyser, 1998), so that the inclusion of varied classroom exercises and task-based activities could turn out to be important elements of adult L2 acquisition.

3. Influence of Aging on Cognitive Skills

The recognition that adult students depend mostly on explicit learning mechanisms to acquire an L2 leads to the consideration that cognitive processes constitute a main factor in defining how early signs of aging may

affect the success of the older student population. Accordingly, this section reviews some of the important findings that were made on this subject over the last twenty-five years.

While it may seem intuitively clear that aging has a generally negative impact on learning, a large amount of research conducted in the field of developmental psychology has revealed a more complex and sometimes contradictory picture. For instance, Schaie (2011) found that while general trends are obscured by large individual differences, some subjects may not show a decline in their cognitive abilities up to about 70 years of age. According to another line of research in intelligence studies, the progression of cognitive abilities in function of age could be explained in terms of a partition of intelligence between fluid and crystallized components (Cattell, 1963; Horn & Cattell, 1966). Based on this model, fluid intelligence is associated with "The use of deliberate and controlled mental operations to solve novel problems that cannot be performed automatically" (Mc Grew, 2009, p. 5) and is usually associated with accidental learning. On the other hand, crystallized intelligence "operates in areas where the judgments have been taught systematically or experienced before" (Cattell, 1971, p. 98), which can also be viewed as "the extent to which a person has absorbed the content of a culture." (Belsky, 1990, p. 125). A key finding with respect to these categories is that their combination appears to mask signs of intellectual decline with aging, even though fluid intelligence may already start diminishing in the early 20's (Raz, Rodrigue, Head, Kennedy & Acker, 2004). Thus, a potential issue with older learners in higher education is that a decrease in fluid intelligence may significantly impact their academic success, as academic studies commonly require the understanding and application of new concepts (Bugg et al., 2006). Another central aspect of cognitive aging has to do with memory. Here as well, a common assumption would be to expect a steady and overall decline with age, when in fact the research on this topic paints a more intricate picture (Henninger, Madden, & Huettel, 2010; Henry, MacLeod, Phillips, & Crawford, 2004). Of main interest are the performances of two long-term memory systems classified as episodic and semantic memory (McRae & Jones, 2013), which on the one hand refers to "the ability to remember specific events situated in time and place" and, on the other hand, to a "vast store of knowledge and skills, including semantic, orthographic and phonological information associated with … language" (Burke & MacKay, 1997, pp. 1846-47). In a way similar to fluid and crystallized intelligence,

research has shown that aging has very distinct effects on episodic and semantic memory in that "age remained an important predictor of episodic but not semantic memory after differences on the background factors had been taken into account" (Nyberg, Backam, Erngrund, Oloffson, & Nilsson, 1996, p. 239). So, aging does not seem to significantly affect semantic memory, although the speed of the processing of the information may decrease with age (Dixon, MacFall, Whitehead, & Dolcos, 2013, p. 456), while older learners are likely to face challenges with the long-term memorization of new information. As a result, while the complementarity of these mechanisms tends to mask an overall memory decline with age, it is evident that older learners enrolled in higher education are likely to face challenges with long-term memorization requirements imposed by academic programs (Park et al., 1996). Separately, it is recognized that learning processes must generally rely on the use of several short-term storage mechanisms that are referred to as working memory (WM) (Baddeley, 1983). These various operations are usually described by means of a model including "a control system of limited attentional capacity, termed the central executive, which is assisted by two subsidiary storage systems: the phonological loop, which is based on sound and language, and the visuospatial sketchpad" (Baddeley, 2003, p. 830). In this capacity, WM is viewed as an essential factor in the L2 learning process (Juffs & Harrington, 2011). Unfortunately, numerous empirical studies have demonstrated that WM tends to decline significantly with age (Borella, Carretti, & De Beni, 2008; Borella, Ghisletta, & de Ribaupierre, 2011; Cansino et al., 2013), involving a pattern of "a significant rapid decline between the second and third decades in all tasks and followed by a second significant decline in the fifth and sixth decades" (Cansino et al., 2013, p. 2299). To explain this effect, Salthouse (1996) submitted that the effectiveness of cognitive functions decreased with age because of a general slowing in processing speed. Crucially, such a decline in WM could be detrimental to older adults engaged in higher education in that an overload of this ability could limit their learning pace and affect the processing of complex material (Sweller, 1994). Yet another factor that is essential to learners is the ability to direct and sustain their attention (Robinson, 2003), which can be defined as the "control over how limited mental resources are utilized in the service of thought and action" (Ruthruff & Lien, 2016). This construct can be divided into a number of categories, e.g. selective, sustained, divided, task-switching and attentional capture, which can be further reduced into subcategories (Zanto & Gazzaley, 2014). While

research has shown that attention generally declines with age, the abovementioned categories do not participate evenly to this outcome. For instance, in the case of selective attention — which "refers to goal-directed focus on task-relevant information while ignoring other irrelevant information" (Zanto & Gazzaley, 2014, pp. 928) — it has been shown for instance that compared with their older peers, young adults have a better ability to filter competing speech (Tun, O'Kane & Wingfield, 2002). Otherwise, studies on divided attention — which relates to the ability "to perform two or more tasks or process two or more sources of information concurrently" (Zanto & Gazzaley, 2014, p. 939) —have demonstrated a clear correlation between aging and a decline in this type of performance (Hawkins, Kramer & Capaldi, 1992). It is noteworthy that the difficulty of the task at hand may interact with these effects, i.e., the deficit experienced by older adults increases with the complexity (McDowd & Craik, 1988). As with WM, these trends may be linked to slower processing speeds, but they also appear to involve the decline of specific attentional mechanisms (Ruthruff & Lien, 2016).

In sum, it was found that aging leads to a progressive lessening of some cognitive skills, including fluid intelligence, episodic memory, working memory and attentional capacity, which all happen to be critical to the academic success of older adults enrolled in L2 courses.

4. Technology-enhanced Language Learning (TELL) Tools for Older L2 Learners

The use of technology has become an inescapable reality of higher education and students today should reasonably expect it to be a major component of their classroom experience. The introduction of TELL tools come with many advantages, such as a potential increase in student engagement (Rashid & Asghar, 2016) and the addition of new learning modes (Fadde & Vu, 2014). With respect to L2 learning, there is much to gain from a highly interactive environment, as "digital technologies allow people to speak or write either synchronously or asynchronously with participants either at a distance or in close proximity" (Chun, Smith & Kern, 2016, p. 66); more generally, "technology provides new ways for languages, cultures, and the world to be represented, expressed or understood" (Chun et al., 2016, p.76). However, are TELL tools in use

today taking into account the specific needs and challenges faced by older adult L2 learners? While all computer assisted tools may not require multitasking, a first concern relates to the potential of technology to create a continuous stream of distractions and interruptions that could be detrimental to the learning process, a drawback that would be even more disadvantageous to older learners (Olivares & Ploof, 2016). Accordingly, it is critical to carefully plan the integration of these tools into the course content (Miller, 2014). A second objection could be made regarding the additional burden that a reliance on technology may place on older adults, who are often expected to have less experience with computer assisted technologies. However, recent research seems to indicate that these concerns are overblown, and that older students may even be better than younger ones in using such learning devices (Ransdell, Kent, Gaillard-Kenney, & Long, 2011). Fortunately, the use of TELL tools also includes many aspects that will tend to contribute to the academic success of older learners. First, the accessibility of these technologies around the clock is of great benefit to these students, who otherwise could find it difficult to complete their coursework during regular daytime hours. Second, these tools may provide them with more opportunities to build a network and feel connected with their fellow students than in a traditional learning setting, where they may find it more challenging to relate to their classmates. Third, computer tools have the capacity to keep older adults more engaged by giving them frequent and instant feedback about their work. Fourth, in view of the wide range of their educational background, prior knowledge may be better assessed with the use of adaptive tools available in computer-mediated environment, thus making it possible to customize the content and the activities of the course (Miller, 2014).

5. Guidelines for Blended L2 Course Design with TELL Tools

Taken together, the research findings that were reviewed in the previous sections may inform the aspects of an L2 blended course that should be emphasized for older learners. To this end, the instructor should take into account the general occurrence of a gradual decline in cognitive abilities with age, including a loss in fluid intelligence affecting the ability of solving new problems, a higher difficulty to memorize new information, a decrease in WM that may lead to cognitive overload, and a higher susceptibility to attention problems. In doing so, the misconception that an L2 may only be

acquired well at an early age (CPH) should be set aside, in view of findings demonstrating that explicit learning abilities play a more crucial role in the L2 learning process of adult learners. All in all, a blended technology class for older L2 learners should be tailored to their specific cognitive challenges and strengths. In this section, these requirements are articulated into a set of design guidelines, which are summarized in Table 1.

5.1. Fluid Intelligence

As it was pointed out, a decline in fluid intelligence with age may affect the acquisition of an L2, as it makes it more challenging to deal with novel information. Mitigating strategies are then to reduce unfamiliar concepts to familiar ones through the use of analogies with previous L1 knowledge, repetition, and simultaneous presentation of images and narration. For instance, the difficulty of becoming accustomed to a tonal language may be lessened through a multimedia presentation that would juxtapose a dialogue with the telling of a story depicting a familiar situation, thus reinforcing the meaning carried by a given tone (Mayer & Moreno, 2003; Mayer, 2005, 2014).

5.2. Working Memory (WM)

It was outlined that adult learners typically experience a gradual decline in working memory, which could then impact their L2 performance. According to research, one of the most effective strategy to address such an issue is to prevent the occurrences of extraneous cognitive overloads (Paas, Renkl, & Sweller, 2003). As it happens, several techniques have been proposed along these lines, which all happen to be well suited to the design of an L2 blended course (Mayer & Moreno, 2003; Mayer, 2003; 2005, 2014):

- *Pretraining*. It is important to pretrain students in the use of the technology components prior to tackling the course material, including online access, download of information, submission of homework, and use of unique features such as instant messaging, discussion boards and videos. This step should typically be addressed in a face-to-face format at the beginning of the course.

- *Signaling.* The idea is to provide cues within the learning material that outline the relevance of specific items (such as colored, bold and special characters in a text), a type of measure that may naturally be integrated into TELL tools and face-to-face contents.

- *Weeding.* This step consists of removing content that is irrelevant to and distracting from the subject matter, such as funny anecdotes. This is all the more critical that the resources offered by the blended instruction format make it easy to insert material for the only goal of pleasing an audience.

- *Aligning.* According to this practice, words and pictures in a presentation are integrated within the same spatial area in order the lower the need for visual scanning, for instance by collocating printed words and graphics, an aspect that is mostly relevant to the TELL component of the course.

- *Segmenting*. Another parameter that may be adjusted is the pace at which students interact with the content in order to reduce the content to small segments that are more easily assimilated (Stiller, Freitag, Zinnbauer, & Freitag, 2009, Stiller & Zinnbauer, 2011). The flexibility to control this component (which could clearly not be done in the face-to-face part of the blended class) is one of the prominent advantages offered by TELL tools.

5.3. Attention Control

Several practices may also be implemented to compensate for the decline in attentional resources experienced by older students.

- *Request for Interaction.* A first technique consists in configuring activities that require the students to frequently interact with the material and/or the instructor and among peers, for instance through online quizzes, tutorials, wikis, blogs, chats, instant messages and/or by providing feedback. Likewise, in a face-to-face situation, the teacher may achieve this goal by asking questions, carrying out polling activities, conducting group activities, and adding many informal assessments throughout a

session (Arnold, Ducate, & Kost, 2012; Jamet & Fernandez, 2016; Miller, 2014; Shekary & Tahririan, 2006; Sotillo, 2005).

- *Attract Students Attention.* TELL tools make it possible to embed features or signals that will capture the students' attention and keep them on task, for instance by carrying out collaborative tasks, enforcing time limits to complete exercises, assigning interactive lessons, and providing auditory and visual support (Mayer, 2003; Mayer & Moreno, 2003; Jamet & Fernandez, 2016).

- *Avoid Presenting Multiple Items of the Same Modality.* As older adults are less able to maintain their focus in the presence of multiple visual and auditory streams (Zanto & Gazzaley, 2014), the TELL tools interface should be designed so as not to include more than one item at once. For instance, L2 dialogs played by the TELL tool should not contain irrelevant background noise or voices.

- *Restructure Complex Tasks.* Task difficulty may negatively impact the more limited attentional resources that are at the disposal of older learners (Zanto & Gazzaley, 2014), so that it makes sense to simplify complex language tasks into easier steps, a recommendation applicable to both components of the blended format.

5.4. Long-Term Memorization

L2 courses for older learners should also be designed to compensate for the challenges posed by the long-term memorization of the linguistic material.

- *Repetition and Memory Aids.* Repeated exposure of the same or slightly modified material may be achieved by playing a video more than once, repeating specific instructions, providing verbal and visual annotations, or asking the students to reiterate the same vocabulary exercise multiple times while introducing minor changes in these tasks. Within the TELL tools, hyperlinks may also be used as memory aids by readily providing access to

explanations, vocabulary and grammar. In addition, the use of memory aids may involve the recourse to flash cards, word walls, conjugation tables and computer adaptive software (Akyel & Erçetin, 2009; Chukharev-Hudilainen & Klepikova, 2016; Yang & Hsieh, 2015).

- *Enforce Practice.* Memorization activities can be implemented in an especially effective manner with TELL tools by taking advantage of the wide number of exercises that may be made available to the students and the possibility to require a minimum number of trials before completion either in or outside the class. For instance, current online platforms usually provide access to repositories of language exercises created by different parties. The teacher has then the option to request that the online software provides corrective feedback to the student in the form of exposure to the specific material that was either not memorized or memorized incorrectly or include additional training opportunities through many online exercises (Herrell, Roblyer, & Jordan, 2006; Hubbard, 2004; Lys, 2013; Oxford, 2006; Payne & Whitney, 2002).

- *Take Advantage of Retrieval-Based Learning Strategies.* It has been shown that the practice of retrieving memorized information enhances long-term learning. In other words, retrieval acts as a "powerful mnemonic" tool (Carpenter & Yeung, 2017; Karpicke & Bauernschmidt, 2011). As it happens, this type of learning technique can be conveniently implemented with TELL tools. As a first example, the student may be required to complete individual online assessment measures, which are then corrected automatically. In another example, students may be asked to retrieve specific material in a collaborative fashion, activities that may be facilitated with TELL tools and may involve the retrieval of aural or written information, grammatical structures and vocabulary through game-based response activities such as participatory quizzes and activities (such as Quizlet and Kahoot), and/or group polling (such as Poll Everywhere, Mentometer) (Kessler & Bikowski, 2010; Piirainen & Tainio, 2009; Wang, 2015; Scholz & Schulze, 2017).

Cognitive Challenges	Suggested Instructional Strategies
Fluid intelligence	Reduce unfamiliar concepts; use analogies with previous L1 knowledge; include simultaneous presentation of images and narration
Working memory	Pre-train the use of technology to comply with course requirements; include signals such as bold characters or colors in the content; avoid irrelevant/distracting materials; present words and pictures within the same spatial area; include TELL tools that have a pacing component; present content in small segments
Attentional capacity	Include opportunities for interaction with the content and among peers in order to focus: online quizzes; tutorials, blogs, wikis, chats, instant messages; provide constant feedback; embed features to capture attention; enforce time limits; use interactive lessons; provide auditory and visual support; avoid presenting multiple items in a single modality; simplify complex tasks
Long-term memorization	Include repetition and memory aids, include hyperlinks or hypermedia; use computer adaptive software; enforce practice in and outside of classroom; use software that includes instant feedback option; use retrieval-based learning strategies; include game-based response activities; and group polling

Table 1. Summary of Cognitive Challenges for Older Students and Suggested Instructional Strategies in Blended Instruction

6. Conclusions

In this article, the problem of the suitability of L2 blended courses to teach an older student population was explored in some detail. To this end, the influence of aging on the L2 acquisition process was analyzed, thus revealing the critical role that declines in fluid intelligence, long-term, episodic memory function, working memory, and attentional capacity may play in this respect. Accordingly, various instructional strategies for the blended classroom were identified and illustrated. Thus, rather than impeding the learning of an L2, the proper implementation of TELL tools in a blended classroom environment may actually facilitate the academic success of older students.

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