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Language Learning through Serious Games to Prevent Neuro-Cognitive Decline. A Repertoire of Methodologies, Tools, and Digital Resources for Inclusivity and Internationalisation

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We call pleasure the beginning and end of the blessed life. For we recognize pleasure as the first good innate in us, and from pleasure we begin every act of choice and avoidance, and to pleasure we return again, using the feeling as the standard by which we judge every good.

Epicurus, Letter to Menoeceus

INTRODUCTION

This research adopts a multidisciplinary perspective that draws on game studies and language education to examine how later-life language learning can be enhanced through game-oriented methodologies. It builds on the idea that gamification, Digital Game-Based Learning (DGBL), and Serious Games (SGs) can make the study of a second language (L2) more stimulating and interactive (Peterson 2009; Peterson 2013; Gutiérrez-Pérez et al. 2023), particularly when Virtual Reality (VR) technology is used to create immersive environments where learners can practise the language in a realistic way (Beck 2019). Furthermore, its relevance is reinforced by a growing body of research showing that Second Language Acquisition (SLA) can offer significant cognitive benefits in later adulthood, helping to mitigate or even prevent mild age-related decline (Bialystok, Craik & Freedman 2007; Bak et al. 2014; Antoniou, Gunasekera & Wong 2013; Woumans et al. 2015).

The project has been funded through a PNRR scholarship for "innovative PhDs" (Ministerial Decree 352/22), awarded by the University of Bari Aldo Moro in collaboration with *Node*, a Rome-based company specialised in IT and digital services. This partnership has led to the creation of a multidisciplinary task force that brought together the domains of language education and software development, resulting in the design of a teaching unit for senior learners of English and a VR-based SG prototype, conceived as its experiential extension, providing a dedicated space in which learners can apply and consolidate the language introduced in class.

Chapter 1 establishes the theoretical foundations of this study by situating gameful approaches within the contemporary educational landscape. In this context, the role of digital innovations is highlighted, as their interactive affordances have progressively reshaped learning environments.

The analysis then turns to the concepts of *play* and *game*, examined through etymological, historical, and cultural lenses. This step is necessary because any

discussion on the learning potential of game-informed methodologies requires first establishing what counts as a "game" in educational terms. Clarifying this notion leads naturally to a comparison between *play*, regarded as a spontaneous, open-ended activity, and *game*, conversely defined as a structured system governed by rules and directed towards defined goals. This conceptual grounding explains why games, rather than play in general, are better suited to instructional design.

Furthermore, the field of Game Studies is taken into account as a crucial interdisciplinary research area that examines the impact of game-informed methodologies across various domains, including education. This theoretical framework provides the ground for an in-depth analysis of gamification, DGBL, and SGs, highlighting their distinct attributes, scopes, and approaches when applied in educational practices.

The analysis finally shifts to consider engagement and motivation, showing their central role in shaping learning outcomes within both traditional and game-mediated contexts. Research in educational psychology highlights how these dimensions are closely connected to emotional, cognitive, and behavioural processes that influence how learners experience their learning path. The chapter also examines the impact of cognitive load and the conditions under which flow can emerge, clarifying when learners are most likely to remain focused and receptive, particularly when challenge and skill are appropriately balanced. Consequently, these reflections form a bridge to the field of language education, illustrating how well-designed games can support immersion, sustain attention, and create environments that favour the processing and consolidation of new linguistic input.

Chapter 2 aims to examine the impact of second language (L2) learning in later adulthood. It begins by outlining the current socio-demographic context, marked by the steady growth of aging populations worldwide, a trend that has placed later life increasingly at the centre of public debate and academic inquiry (Luise 2024). Within this scenario, L2 learning is recognised as a meaningful source of cognitive stimulation

that can support active and healthy aging. Studies indicate that engaging with a new language may help preserve neural plasticity and strengthen cognitive reserve, contributing to mitigate or even prevent mild age-related decline (Antoniou, Gunasekera & Wong 2013).

In this context, SLA in the third age is presented as a multidimensional process that moves beyond the biological determinism historically associated with the Critical Period Hypothesis (CPH). Drawing on insights from andragogy, geragogy, and glottogeragogy, it is argued that language learning remains attainable for older adults as long as instruction is paced appropriately, supports their autonomy, and focuses on concrete, personally relevant goals.

The chapter also takes into account the challenges that may hinder foreign language acquisition, reflecting on the impact of age-related stereotypes portraying older adults as unable to learn effectively or hesitant to engage with educational technologies. Such assumptions may be socially reinforced and internalised, with negative consequences for learners' confidence and sense of self-efficacy.

Overall, the core message that emerges is that learning potential in later life is not entirely shaped by biological constraints, but largely depends on the socio-cultural conditions and self-limitations that may negatively impact learning.

Chapter 3 aims to translate the theoretical considerations outlined above into the design of a teaching unit for senior beginner learners of English and a VR-based SG prototype conceived as its coherent extension. Before moving to the planning stage, an exploratory survey was administered to a group of twenty participants, enrolled at a local University of the Third Age, using a mixed-method approach that combined multiple-choice and open-ended questions. The aim was to gather essential information for defining the thematic focus, linguistic level, and communicative situations to be presented in both the unit and the SG. Through their responses, participants expressed a clear preference for travel-related themes and described a linguistic background consistent with a beginner (A1) profile. From a technological

perspective, they reported limited digital confidence, although many expressed openness towards trying a VR-based activity if supported during the experience. These insights proved crucial for the subsequent planning of both the teaching unit and the prototype.

As a result, the unit has been designed as a compact five-module mini-course built around a simple narrative featuring Anna, a 60-year-old Italian facing basic communicative situations during a holiday in London. This storyline provides a coherent backdrop for the classroom activities and introduces a character senior learners can easily identify with. A student-centred approach has been adopted for the development of the teaching materials, integrating all skills (listening, reading, vocabulary, grammar, and speaking) to encourage active participation in the learning process, consistent with glottogeragogical principles and the *Cambridge English* methodology.

Moreover, the VR-based SG has been conceived as an immersive environment that allows learners to revisit and simulate selected communicative functions after completing each module of the unit. Its purpose is to provide a space where senior beginners can apply classroom input in a spontaneous and exploratory way through manageable tasks, brief interactions, and low-pressure situations so as to reinforce language use in a realistic yet supportive setting.

Overall, the project aims to outline an instructional model that may serve as a basis for future implementations and empirical validation, exploring how VR-based environments can support language learning in later life in ways that feel meaningful, accessible, and sustainable over time.

CHAPTER 1

GAME-ORIENTED LEARNING IN THE DIGITAL AGE: CONCEPTS, MODELS, AND APPLICATIONS

1.1. Beyond Entertainment: Game-informed Approaches and their Impact on Learning

In today's ever-evolving cultural milieu, technology plays a prominent role in people's life, extending its influence to the domain of teaching and learning. Across educational institutions, the use of digital devices is widely employed as a strategic means to bolster and enrich the learning process taking advantage of their highly interactive and engaging potential (Jaramillo, Criollo & Luján 2022). In the 21st century, the pervasiveness of technology combined with the widespread influence of a game-oriented mindset has led scholars to coin the expression "ludification of culture" (Montola, Stenros & Waern 2009; Raessens 2006), a trend which popularizes the adoption of playful approaches across multiple sectors and disciplines, including education.

Digital Game-Based Learning (DGBL), gamification, and Serious Games (SGs) have a significant role in this paradigm shift, as they contribute to enhance learning, albeit from different angles. DGBL involves the incorporation of existing video games into the educational framework, in order to harness their entertainment elements for learning goals (Pujolà & Appel 2022). In contrast, gamification is an approach that implies the use of game elements and game design techniques (i.e., mechanics, dynamics, and aesthetics) in non-game contexts (Werbach & Hunter 2012) to turn an activity, which has not been originally conceived as a game, into an authentic gamified

experience. Finally, a SG is a type of game specifically designed for educational outcomes, where the entertainment aspect serves as a supportive element rather than being the primary focus (Salen & Zimmerman 2004)[1].

The growing popularity of ludic instructional methodologies reflects the rise of a critical sensitivity towards the potential of games – especially video games – which have transformed from simple leisure tools to significant cultural mediums and sources of formative experiences (Deterding et al. 2011). It should be emphasised that a substantial body of research has explored the positive impact of video games, highlighting how they can improve problem-solving skills, critical thinking, creativity, and content retention (see Vogel et al. 2006; Scott, Casey & Kane 2022). As such, these findings support the claim that they are particularly well suited to learning (Prensky 2006; Gee 2003; Egenfeldt-Nielsen 2006; Squire & Jenkins 2003). A key reason is that video games may provide a motivating and stress-free environment, allowing players to achieve a state of "relaxed alertness" (Hamdaoui, Idrissi & Bennani 2022: 291), which facilitates the acquisition of information. This is closely linked to the concept of *flow* (Csikszentmihalyi 1990), which refers to a mental state of deep concentration and immersion, where external distractions fade away and engagement intensifies, ultimately enhancing the learning process.

Among the latest trends in educational gaming, SGs represent a noteworthy phenomenon, as they are highly versatile tools which may be employed in many sectors, such as education, physical and mental training or rehabilitation, communication, business, and the military (Hamdaoui, Idrissi & Bennani 2022; Susi, Johannesson & Backlund 2007; Muscio et al. 2015).

Nonetheless, even with their significant promise, SGs often face hurdles when it comes to seamlessly integrating fun with educational content. Hamdaoui, Idrissi and Bennani (2022) highlight this issue, noting that, for instance, over the past decade,

[1] A more in-depth discussion of these different approaches will follow later in this chapter.

numerous educational games have been developed, but only a few have managed to gain prominence in the market. This limited success is largely due to the challenge of striking an effective balance between instructional content and gameplay (Garris, Ahlers & Driskell 2002; Quinn 2005; Kim et al. 2017; Gunter, Kenny & Vick 2008). Some games, for instance, tend to prioritize high-quality graphics and gameplay mechanics, hastily integrating learning content with less efficiency (Hamdaoui, Idrissi & Bennani 2022). On the other hand, others prioritize seriousness over entertainment, sacrificing their immersive and engaging qualities, so that they become less appealing than Commercial Off-the-Shelf (COTS) games (ibid.).

Therefore, to address these issues, scholars (e.g., Peirce, Conlan & Wade 2008; Kickmeier-Rust & Albert 2010) emphasize the importance of integrating pedagogical and learning objectives effectively in game development. This entails a careful consideration of how to incorporate key elements that contribute to the success of video games (e.g., mechanics, dynamics, rules, and graphics), without neglecting the quality of learning materials. Notably, effective educational games tailor their content to the skills and preferences of learners, providing more adaptive and engaging gameplay experiences (Andersen 2012). In order to achieve optimal customisation, it is essential to carefully assess the end users' needs, taking into account various factors, including their prior knowledge, strengths and weaknesses, as well as individual learning styles (Chrysafiadi & Virvou 2013; Ciloglugil & Inceoglu 2012).

Personalised gameplay is a strategic design consideration in the development of SGs, including those for Second Language Acquisition (SLA), as it helps sustain motivation and engagement over time (Borkowska 2022; Chen 2022; Calvo-Ferrer 2017; Ebrahimzadeh & Sepideh 2017; Heath, McDaniel & Panchanathan 2022; Burguillo 2010; Chang et al. 2013; Chou 2014; Federmeier & Huang 2020; Garris, Ahlers & Driskell 2002; Hainey et al. 2011). While research confirms that well-designed educational games can appeal to a wide range of learners, including both adults and children (Becker 2001; Grice & Strianese 2000; Trollip & Alessi 2001;

Whitton 2007; Whitton 2011b), motivational responses to games vary significantly. Not all games elicit the same level of enthusiasm, and mismatches between game design and players' expectations can hinder the learning process (Cordie, Lin & Whitton 2018). This highlights the need for a nuanced understanding of motivational dynamics in digital game design for SLA. Learners differ not only in their tastes and interests, but also in how they perceive the educational value of games. These differences are often shaped by age, prior experience, and goals. While some find games highly motivating, others view them as unproductive or incompatible with educational settings (Trollip & Alessi 2001; Oblinger 2004; Prensky 2001a; Gee 2003). For example, adults may be less receptive to game-based learning, as they often adopt more strategic, goal-oriented approaches and may perceive games as lacking adequate academic standards, being time-consuming, or insufficiently aligned with their immediate learning needs (Knowles, Holton & Swanson 2005; Whitton 2007; Whitton 2011b; Wlodkowski 2011). In addition, older adults may face further barriers related to limited familiarity with digital technologies, which can affect their confidence and willingness to engage with video games (Ivan & Cutler 2021).

The investigation conducted above offered an initial glimpse into the domain of game-informed learning approaches, providing the reader with a contextual understanding of gamification, DGBL and SGs, which will be subjected to a more in-depth examination throughout this chapter. The analysis will then shed light on their multifaceted impact on the educational landscape, with a focus on SLA, including considerations relevant to adult learners.

1.2. Defining "Play" and "Game": Cultural Roots and Educational Implications

Before turning to gamification, Digital Game-Based Learning (DGBL), and Serious Games (SGs), it is helpful to first reflect on the concepts of *play* and *game*, paying attention to their distinct attributes and subtle semantic nuances. Although they are often used interchangeably in everyday language, in game studies these terms refer to different practices with distinct implications for learning. Exploring their meanings is not a mere terminological exercise, but rather serves to clarify how game-informed approaches function as structured learning methods, drawing on specific rules, goals, and design elements. This, in turn, helps underscore their educational validity, countering potential prejudices that reduce the game realm to trivial entertainment, lacking adequate strategy or pedagogical rigour.

With this premise in place, it is now worth examining the concept of play more closely. Deeply ingrained in the tapestry of collective human experience, play is acknowledged as "an archetypical activity" (Pavlidis & Markantonatou 2022: 171) stemming from "primordial biological structures" (ibid.: 171) that precede the development of consciousness and speech capabilities. Building on this foundation, in their study, Brown and Vaughan (2010) highlight the qualitative features intrinsic to playing, which include an apparent lack of purpose, voluntary participation, intrinsic appeal, temporal dissociation from reality, reduced self-awareness, promotion of spontaneous improvisation, and an enduring desire to stay engaged in the activity (ibid.).

Some early attempts to conceptualize the notion of play date back to ancient times. For instance, Scott, Casey and Kane (2022) point out how *pais* (or *paizo*) was a widely used term in Greece, particularly during Homer's era. This concept encapsulated an idea of child-like play (ibid.), comprising pastimes carried out just for sheer enjoyment with no predefined goals. Moreover, these scholars also observe the

emergence of a distinct concept in the *Odyssey*, denoted as *paizein* (ibid.). Differing semantically from *pais*, this term was employed to describe adult play activities (e.g., sports, games, or engagement in literary or theatrical endeavours), which still remained separate from work or serious undertakings (ibid.).

Crucially, a genuine linguistic shift is set to unfold in the mid-fourth century BC, marked by the introduction of the term *paideia* into Greek texts (ibid.). In its English translation, this concept stresses a pioneering intellectual distinction among child-like play, adult serious play, and labour-intensive work. More accurately, the idea of *paideia* transcended the traditional boundary that had hitherto separated play from work, placing a heightened emphasis on the notion of "productive leisure" (*schole*), which pertained to both children and adults who devoted their free time to independent study or engaged in education facilitated through tutors or apprenticeships (Jaeger 1986; Scott, Casey & Kane 2022).

Framing this inquiry within a philosophical background, Plato stressed the significance of early structured play, characterised by an organised, rule-based framework, as a means to cultivate social stability and encourage a sense of law-abiding citizenship (D'Angour 2013). In line with his mentor's perspective, Aristotle advocates for the concept of "deep play" (Scott, Casey & Kane 2022), as a deliberate strategy conceived to blend intellectual inner leisure (*schole*) with training and education of Greek society (*paideia*) through playful activities (*paidia*) (Gray 1998). In other words, "deep play" highlights the principle that meaningful and intellectually enriching play can contribute significantly to the overall development and education of a society. According to Aristotle, play had the potential to bridge the gap between recreational activities and serious pursuits, adding excitement to the monotony of formulaic learning, while preventing work from devolving into simple leisure (Scott, Casey & Kane 2022). Moreover, he argued that engaging in play could not only lead to knowledge acquisition, but also bring individuals closer to divine happiness through

theoretical and creative thinking, essentially transforming play into a continuous form of intellectual development (ibid.).

The investigation carried out thus far, which has explored diverse etymologies associated with the concept of play, and scrutinised philosophical perspectives regarding its role in cultural, social, and even political contexts, intriguingly reveals that the lively debate on the potential of playful activities for serious purposes sparked thousands of years ago, foreshadowing, in some respects, present-day discussions concerning their role in the learning process. Nonetheless, it is important to recognise that, in contrast to the past, the contemporary approach to Game Studies systematically draws a clear distinction between the concepts of play and game, emphasizing their different semantic connotations, unique features, and goals.

In this regard, it is crucial to highlight the invaluable insights of Dutch historian Johan Huizinga (1955), whose groundbreaking work *Homo Ludens* has significantly shaped today's cultural and philosophical understanding of the concept of play. Huizinga contends that play exhibits inherent nonfunctional and irrational qualities, merely providing immediate involvement without any intrinsic utility (Rodriguez 2006). Consequently, its main purpose is the pursuit of pure episodic pleasure devoid of any pragmatic benefits (ibid.). He further notes that, as a shared practice among both animals and humans, play is fundamentally marked by its illogical nature (Scott, Casey & Kane 2022). This perspective starkly contradicts Plato's belief in the cultural and societal function of play. On this account, Huizinga does not endorse the illustrious philosopher's idea that structured childhood play facilitates the transition to ordered adult behaviour (ibid.). Nor does he acknowledge play as a motivating strategy for learning, thereby challenging Plato's famous statement: "We learn through playing, and only through playing" (Ardley 1967: 234).

Aligned with Huizinga's view, contemporary research offers a more nuanced perspective by acknowledging play as a spontaneous practice, which may lack overt educational attributes, owing to its absence of any predetermined goal and emphasis

on enjoyment as its primary purpose. Conversely, as will be illustrated later, games stand out for their rule-based well-defined and organised structure, earning recognition as tools conducive to learning.

However, while contemporary pedagogical perspectives may at times appear to overlook the educational significance of play, it is important to stress that they do not necessarily intend to dismiss the substantial benefits that play offers, especially from a biological and neuroscientific standpoint. Numerous studies highlight the pivotal role of play in brain development. Over the years, researchers (e.g., Iwaniuk, Nelson & Pellis 2001; Pellis & Iwaniuk 2002) have revealed a robust positive correlation between brain size and mammals' natural inclination to engage in play. Furthermore, in his exploration of animal play, Byers (1998) conjectures that this activity fosters the creation of a sense of self through simulation and testing, contributing significantly to brain formation. Interestingly, even as far back as 1964, Diamond, Krech and Rosenzweig (1964) reported that rats exposed to play exhibited the development of larger and more complex brains. Building upon these insights, it may be added that during play the brain can navigate various scenarios without jeopardizing its physical or emotional well-being (Pavlidis & Markantonatou 2022). According to Brown and Vaughan (2010), play facilitates the generation of novel cognitive combinations through the realm of fantasy. In this process, a complex brain engages in self-development and interpretation of the world, showcasing the profound impact of play on cognitive evolution (ibid.).

In the abovementioned collective body of research, it is stressed that play consistently functions as a cognitive stimulation mechanism within the brains of various species, transcending the boundaries of the human domain. This corroborates the notion of play as a natural and instinctive activity, which takes place beyond the constraints of strict rationality. Returning to the human dimension of play, by engaging in this practice, each individual inhabits a virtual or artificial world, shaped by the power of imagination (Pavlidis & Markantonatou 2022). Consequently, play can be

conceptualized as a means to explore fanciful alternative scenarios, leading in turn to a deeper understanding of the world, and facilitating a process of self-discovery (ibid.).

Hence, notwithstanding assertions that play may lack a defined, rule-based structure, which could raise questions about its educational efficacy, its significance in terms of biological development cannot be denied.

Echoing the diverse facets of the term play, game is a concept which similarly covers a rich variety of interpretations. Based on a comprehensive review of literature, consensus on a single, universally embraced definition of the latter still remains elusive (Susi, Johannesson & Backlund 2007). Undoubtedly, framing the notion of gaming proves to be a pretty arduous task, given that it encompasses a plethora of subcategories and objectives, transcending boundaries as games permeate in digital and non-digital contexts, manifesting in an abstract or physical dimension.

In the quest to determine the distinctive features of games, Schell (2008: 37) posits that they can be viewed as "problem-solving activities". Moreover, some scholars lay emphasis on the rule-based, organised structure inherent in ludic experiences which, according to Dorn (1989), may entail:

> "[…] any contest […] among adversaries […] operating under constraints or rules for an objective goal" (ibid.: 2).

Alternatively, games are conceptualised as:

> "[…] activities undertaken by players whose actions are constrained by a set of explicit rules particular to that game and by a predetermined end point" (ibid.: 3).

In line with this perspective, Hays (2005) considers a game as:

> "[…] an artificially constructed, competitive activity, with a specific goal, a set of rules and constraints that is located in a specific context" (ibid.: 15).

As he further adds:

> "[A game] resembles reality and provides a competitive environment where the purpose (enjoyment, information, instruction, etc.) challenges the player to reach a goal" (ibid.: 15).

Seeking to craft a coherent definition, in the field of ludology there are some who emphasize not only the structured framework of games, delineated by specific rules and objectives, but also their pivotal role as vehicles for player immersion into alternate scenarios, which may mirror real-life situations or project into imaginary realms. In harmony with this view, Michael and Chen (2006) stress that a game may be regarded as:

> "[…] a voluntary activity, obviously separate from real life, creating an imaginary world that may or may not have any relation to real life and that absorbs the player's full attention. Games are played out within a specific time and place, are played according to established rules, and create social groups out of their players" (ibid.: 19).

This perspective resonates with Huizinga's (1955) interpretation, according to which a game is depicted as a cultural product where the participants willingly adhere to established rules, thereby forming a magic circle, namely, a parallel universe imbued with meaning for the participants, serving to temporarily distance them from the real world.

Games may also serve as powerful tools for connecting with friends and strengthening familial relationships, among other benefits. In this regard, Zichermann

and Cunningham (2011) underline four main reasons as to why individuals would engage in ludic experiences. These include the pursuit of mastery throughout the gameplay, the need for stress relief, a sense of enjoyment deriving from the activity itself, and the desire for social interaction. More accurately, starting from the assumption that the success of a game is closely tied to its ability to maintain high levels of player motivation (Lazzaro 2004), largely due to the entertainment value it provides, it stands to reason that people primarily engage in gaming experiences, as they find them highly enjoyable.

Therefore, while it may sound obvious, fun is a fundamental factor in recreational activities, so much so that it should be included in the analysis of key attributes defining games. However, it is noteworthy that of all the definitions previously discussed, none explicitly mentions fun as a significant aspect within a game. In order better elucidate this point, it is crucial to uncover the difference between games designed for amusement and those intended for educational purposes (Berns & Ruiz-Rube 2023; Peterson et al. 2022). In entertainment-oriented games, the focus on fun is universally acknowledged, as this category specifically caters for end users seeking leisure (see Bisson & Luckner 1996; Brom, Preuss & Klement 2011; Connolly et al. 2012; Gaver et al. 2004; Hamdaoui, Idrissi & Bennani 2022). Conversely, in the realm of educational games, the integration of pleasure-inducing elements is often a topic of intense debate, where divergent opinions clash. On this account, some argue against the effectiveness of fun in facilitating learning and even disregard the broader impact of games or computer-based applications within the pedagogical landscape.

Stoll (1999), for instance, offers a critical perspective on what he calls the obsessive trend of "turning the classroom into a funhouse" (ibid.: 13), and expresses concerns about the role of computers, or "teaching machines", fearing the prospect that these technologies may "direct students away from reading, away from writing, away from scholarship" (ibid.: 13) so that, as a result, they:

> "[…] dull questioning minds with graphical games where quick answers take the place of understanding, and the trivial is promoted as educational" (ibid.: 13-14).

The author also contends that an educational approach based on the integration of technological tools for entertainment purposes may jeopardise reflection and critical thinking, adding that:

> "[t]urning learning into fun denigrates the most important things we can do in life: to learn and to teach. It cheapens both process and product: Dedicated teachers try to entertain, students expect to learn without working, and scholarship becomes a computer game" (ibid.: 13-14).

Nonetheless, it should be stressed that Stoll's fierce criticism towards technology stems from a time when digital devices had not yet reached the ubiquitous status they currently hold in various facets of human life.

Since the turn of the millennium, technological advancements have progressively shaped new habits and behaviours, thus gaining prominence in many working and educational environments. Therefore, in light of such cultural and social transformations, according to Squire, Giovanetto and Devane (2005), the key issue today is not whether formal education ought to be gamified. Rather, the focus lies on how educational technologists will be able to address the needs of digital native generations (ibid.), who have grown up immersed in interactive gaming, and thus expect comparable engaging experiences from their learning materials.

In this perspective, some scholars consider entertainment a central aspect of education facilitated through games. Koster (2013) labels fun as a byproduct of the learning process, while Prensky (2001a) even asserts that instructional games should prioritise fun, with learning emerging only as a subsequent outcome. In contrast, Michael and Chen (2006) adopt a more balanced position, considering games for

educational purposes, such as SGs, as tools mainly intended to enhance learning, whereas amusement serves merely as an ancillary benefit, if achievable.

It is essential to point out that the above-cited passages represent just a handful of examples among a multitude of attempts to adequately define games. A wealth of studies highlights that scholars tend to approach this issue from different angles. As of today, definitions pertaining to games often appear to be fragmented[2]. Hence, it is necessary to adopt multiple viewpoints, acknowledging games as "problem-solving activities" (Schell 2008: 37), inherently involving specific rules, constraints, and predetermined goals (Dorn 1989; Hays 2005). As simulation tools, they may replicate real-life situations or project players into imaginary worlds (Michael & Chen 2006; Huizinga 1955; Hays 2005). In addition, the profound impact of games in fostering social connections and strengthening interpersonal ties (Michael & Chen 2006) should not be underestimated. In the domain of educational games, it is also essential to align with contemporary research, which advocates for the integration of engagement features within learning experiences, assuming that fun plays a pivotal role in boosting motivation, thereby facilitating effective knowledge or skill acquisition (see Hamdaoui, Idrissi & Bennani 2022; Burguillo 2010; Chang et al. 2013; Whitton 2007; Whitton 2011b). Finally, consistent with Michael and Chen's (2006) perspective, it should be emphasized that entertainment serves as a means to enhance learning outcomes, rather than being considered the ultimate goal.

On the basis of the considerations outlined above, the terms play and game are subjected to a complex interplay of cultural, philosophical, scientific, and linguistic perspectives. It has been highlighted that early conceptualisations tend to ambiguously encapsulate attributes typically related to the sphere of games within the notion of play. However, resonating with Huizinga's (1955) and Caillois's (1961) viewpoints, contemporary research (e.g., Prensky 2001a; Prensky 2002; Salen & Zimmerman

[2] For a systematic review of game definitions, see Arjoranta (2019).

2004; Juul 2005) has helped refine our understanding of these two categories by drawing a systematic distinction between the essentially free nature of play (*paidia*) and the rule-bound structure of games (*ludus*), arguing that the latter are deemed particularly suitable for educational purposes.

The investigation carried out above was a necessary starting point, before moving the discussion towards Game Studies, a relatively recent academic field concerned with the use and implications of game-based methodologies. This step sets the stage for a more focused examination of gamification, DGBL, and SGs in educational contexts.

1.3. Game Studies: Origins and Evolution

The rise of gaming culture has led to the emergence of Game Studies as an interdisciplinary academic field, bringing together scholars from diverse disciplines, such as education, sociology, psychology, computer science, communication, as well as literary, film and media studies (Mayra 2008). There are several reasons as to why this domain merits consideration in the present discussion. Firstly, Game Studies offers a robust framework for understanding games as complex cultural artifacts, which scholars argue can influence learning, motivation, and social interaction (e.g., Gee 2005; Merkel & Sanford 2011; DeVane 2014). Additionally, research in this area explores the ways in which games mediate social and cultural values, studying how players engage with narratives and relate to characters within virtual worlds (Salen & Zimmerman 2004). Finally, this field fosters critical inquiry into the ethical implications of game design and the responsibilities of developers in shaping and representing different identities (Bogost 2007).

In recent years, Game Studies has expanded considerably, although academic interest in games can be traced back to earlier historical and ethnographic works.

Pioneering contributions include Stewart Culin's 1907 *Games of the North American Indians*, and Harold James Ruthven Murray's *A History of Chess*, published in 1913 (Mayra 2008). Gaming research also intersects with the history of simulation, which has long recognised the great potential of games for educational and strategic learning purposes. For instance, as early as 1780, Helwig, a court official in Germany, developed a war game based on chess principles to introduce young military trainees to tactics in an engaging way (Von Hilgers 2012).

However, it was not until the 1970s and 1980s that dedicated organizations began to form in response to the increasing interest in games within military and leisure settings (Mayra 2008). Groups like the North American Simulation and Gaming Association (NASAGA), the International Simulation and Gaming Association (ISAGA), and The Association for the Study of Play (TASP) were founded during this time, along with influential journals, such as *Simulation & Gaming*, *Play and Culture*, *Journal of Play, Theory and Research*, and *Play and Culture Studies* (ibid.).

The advent of computer technology then opened up new directions for Game Studies, particularly with the growing popularity of videogames starting in the mid-1980s (Newman 2012). In this context, as videogames became increasingly complex, incorporating narrative elements, the "ludology vs narratology" debate became central to the field by the end of the 1990s (Mayra 2008). Game researcher Gonzalo Frasca (1999) introduced the term "ludology" to provide a framework for scholars from various disciplines, particularly those focused on narrative studies, to examine games beyond traditional storytelling. Ludology provided a novel perspective, positing that games, when considered in their own terms as forms of art and culture, are in some sense unique, and in need of their own theories and methodologies of research (Mayra 2008). This view marked a turning point, igniting a period of lively academic debate around the beginning of the 21st century, which aligned with the launch of *Game Studies*, a peer-reviewed online journal, in 2001, and the founding of the Digital Games

Research Association (DiGRA), created to support and connect researchers across various domains within Game Studies (ibid.).

Today, the field continues to evolve from a multidisciplinary perspective, incorporating diverse research methods and viewpoints (Deterding 2017). At its heart lies the exploration of the educational and societal impact of games, with particular focus on gamification, Digital Game-Based Learning (DGBL), and Serious Games (SGs) (Beil, Hensel & Rauscher 2017).

In education, academic research investigates the potential of gameful approaches to foster cognitive development by improving problem-solving, critical thinking, and decision-making (Scott, Casey & Kane 2022). Moreover, integrating games into classroom curricula remains a critical focus within this area of studies, which aims to investigate the future of gaming in education and its role in enhancing learning (Prensky 2001a). Games are also shown to be powerful tools for motivation and engagement, especially for learners who may struggle with traditional teaching methods (Gee 2003; Gee 2004). Designing inclusive and accessible games for diverse learner typologies is a further key focus of research within Game Studies (Jaramillo, Criollo & Luján 2022).

Beyond education, the social impact of games is a particularly significant area of inquiry. This includes how virtual worlds and online communities influence social interaction, identity formation, and real-world relationships (Steinkuehler & Williams 2006). Moreover, the representation of gender, race, ethnicity, and sexuality in games, and how these elements challenge or reinforce societal norms, is also a relevant aspect under investigation (Malkowsky & Russworm 2017). Additionally, Game Studies analyses the cultural and economic influence of games, considering their role in popular culture and the economy (Taylor 2018). Finally, the cognitive and emotional effects of gameplay are taken into consideration, exploring how games can enhance cognitive skills, emotional regulation, and attitudes (Yee 2006), while also delving into

the technical and creative aspects of game development, as well as the relationships between designers and players (Gee 2005).

From an educational perspective, the focus on Game Studies stems from the assumption that this research domain offers a robust critical framework for integrating game-informed practices into learning environments. Within this context, education emerges as a particularly rich area of inquiry, as Game Studies provides theoretical and methodological tools for the design and evaluation of such approaches. These include gamification, DGBL, and SGs, with particular attention to their pedagogical relevance and impact.

1.4. Game-Informed Approaches to Learning: Concepts, Practices, and Theoretical Foundations

Gamification, Digital Game-Based Learning (DGBL), and Serious Games (SGs) present distinct features and applications in education, significantly influencing the design of instructional activities and the assessment of learning outcomes (Pujolà & Appel 2022). The following section will provide an in-depth analysis of these different approaches, each examined individually.

1.4.1. Gamification

Over time, new methods for acquiring knowledge and skills have proliferated, becoming more dynamic, inclusive, and tailored to individual learning styles. Advances in science and technology have furthered progress in key areas including health, transportation, communication, and notably, education (Topal & Karaka 2022). In relation to the latter, the advent of digital innovations has prompted a transition from traditional, teacher-led models with a focus on rote memorization to innovative,

student-centred environments, encouraging more personalised learning experiences (Slattery 2024). Within this context, gamification has stood the test of time, enhancing the realm of e-learning, despite initial scepticism regarding its effectiveness in maintaining students' long-term engagement (Topal & Karaka 2022).

Historically, games have always been intertwined with cultural practices, yet gamification as an explicit concept has emerged prominently only in the last two decades (ibid.), as a versatile educational approach, applied in both digital and non-digital contexts. Gamified activities, for example, may steep into daily life, transforming routine tasks such as participating in events, prioritizing e-mails, reading books, or even brushing teeth, into game-like experiences (Pavlidis & Markantonatou 2022).

However, it is worth stressing that the influence of technology has significantly contributed to its increasing pervasiveness (Topal & Karaka 2022). The rapid growth of digital marketing has fostered the rise of successful desktop and mobile applications employed for educational purposes (ibid.). In this context, gamification allows students to rehearse real-life scenarios and related challenges within a safe, controlled environment (ibid.). A notable example is *Duolingo*, a popular L2 learning platform, which integrates gamification elements, such as virtual currencies, scoring systems, leaderboards, and celebratory rewards to turn language instruction into a highly engaging and addictive experience (Shortt et al. 2023). This effect is further amplified by collaborative and competitive tasks designed to promote meaningful social interaction among users (ibid.).

Beyond standalone apps, Learning Management Systems (LMS), such as *Moodle*, *Sakai*, *Blackboard*, and *Canvas*, have also incorporated gamification to optimise the e-learning experience (Turnbull, Chugh & Luck 2020). Moodle, for instance, employs a badge system to reward students for their progress and achievements (Gamage, Ayres & Behrend 2022). This simple yet effective tool may

validate the learning process, encourage students to keep advancing, and create a cycle of motivation and engagement (ibid.).

To effectively explore the impact of gamification in learning, it is essential to first gain a clear understanding of the term. This approach not only helps distinguish gamification from Digital Game-Based Learning (DGBL) and Serious Games (SGs), but also sheds light on its unique characteristics and applications within the broader landscape of educational innovations. Framing the concept of gamification is a challenging task. The term was mentioned for the first time by game programmer Nick Pelling in 2002 and began to gain widespread popularity only in the second half of 2010, driven by the growing involvement of scholars, educators, companies, and businesses across various sectors (Burke 2014). A comprehensive review of the analysed literature reveals a multitude of definitions. Among the most noteworthy is the one promoted by Zichermann and Cunningham (2011), who view gamification as:

> "[…] the process of game-thinking and game mechanics to engage users and solve problems" (ibid.: XIV).

Similarly, Kapp (2012) states that:

> "[Gamification involves] using game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (ibid.: 10).

Moreover, Werbach and Hunter (2012) describe it as:

> "The use of game elements and game-design techniques in non-game contexts" (ibid.: 26).

In essence, gamification incorporates specific gaming strategies, techniques, and mechanics across diverse environments and settings to enhance learning, problem solving, and engagement.

Having outlined what gamification is, it is equally important to dispel common misconceptions surrounding this educational practice. In this regard, as Kapp (2012) points out:

- Gamification extends beyond the superficial accumulation of points, medals, and rewards, emphasizing the importance of adopting a game-oriented mindset.

- The goal of gamification is not to oversimplify educational content. It rather seeks to engage and stimulate learners through thoughtfully designed gamified activities.

- Gamification strategies are not a recent phenomenon. Traditional teaching methodologies have long employed elements typically associated with this learning approach.

- Gamification is not unfamiliar to educators.

- Gamification is not suitable for every learning scenario and needs to be applied judiciously.

- The construction of an effective gamified learning experience is complex and often misunderstood as an easy task.

- Gamification incorporates a broad range of elements, going beyond just game mechanics to create a more comprehensive and engaging experience.

Contrary to the belief that gamification equates to game development or the mere act of converting educational content into games, according to Topal and Karaka (2022), it is about strategically crafting experiences that sustain learner involvement. In other words, it aims to make learning experiences more compelling and interactive without compromising educational goals.

In scholarly discourse and practical application, this approach is more closely associated with the game realm than with the concept of play. As has been highlighted previously in this chapter, play is considered a broad domain with less specificity, marked by improvisation and creativity. Conversely, gaming is characterized by its structured, rule-governed nature and competitive efforts towards achieving specific goals. Hence, the design of gamified activities often tends to prioritize rule-based, goal-oriented tasks, with scant room for open-ended, spontaneous play (Deterding 2012).

1.4.2. Gamification Design Frameworks

Effective gamification requires more than creativity. It rather demands a structured approach guided by proven design models, which offer insights into crafting meaningful and engaging experiences that align with learners' needs and goals. A prominent example is the so-called "Gamification Toolkit", an expression coined by Werbach and Hunter (2012) to designate a set of core elements – dynamics, mechanics, and components (as summarized in Table 1) – that are central to the architecture of gamified systems.

Dynamics are the implicit, yet influential, factors that shape the gamified experience without being overtly integrated into the gameplay. Werbach and Hunter

(ibid.) list several examples in the context of gamification: Emotional states (curiosity, competitiveness, frustration, happiness); constraints (limitations or compromises that players must contend with during gameplay); a narrative thread (a consistent storyline); relational aspects (collaborative vs independent player mode); and progression (monitoring and encouraging personal advancement and skill development).

Gamification Toolkit	Definition	Elements
Dynamics	Implicit fundamental factors shaping the gamified experience that are not directly integrated into the gameplay.	Emotions; Constraints; Narrative; Relationships; Progression.
Mechanics	Basic rules and processes that guide player's actions within the game environment.	Challenge; Competition; Chance Cooperation; Resource Acquisition; Feedback; Rewards; Turns; Transactions; Win States.
Components	The tangible and intangible elements that make up a game.	Achievements; Badges; Avatars; Collections; Boss Fights; Content Unlocking; Combat; Leaderboards; Gifting; Points; Levels; Social Graphs; Quests; Virtual Goods; Teams.

Table 1. Summary of Dynamics, Mechanics and Components based on Werbach and Hunter (2012).[3]

Mechanics are the core processes driving player interaction and engagement in the gamified system. According to Werbach and Hunter (ibid.) they may include: Challenges (complex tasks requiring resourcefulness to be solved); competition (individuals or teams vying for victory); chance elements (introducing unpredictable scenarios); collaboration (players uniting for shared goals); resource acquisition (collecting items within the gamified experience); feedback (performance evaluations); rewards (granted for completed achievements); turn-taking (the order in which players act within the game); transactions (trading among players); and win

[3] This summary table has been adapted from Pujolà and Appell (2022: 995).

states (defining the success conditions of a group of players as opposed to their counterparts).

Components are the specific features that are recognizable within the game environment, that is, the building blocks that players directly interact with. Werbach and Hunter (ibid.) emphasize the significance of several elements falling into this category, such as: Achievements (defined goals in the game), badges (symbols displaying player's success), avatars (player virtual representations), collections (gathered items or badges), boss fights (tough end-level challenges), content unlocking (accessing new features), combat (timed confrontations), leaderboards (player rankings), gifting (resource exchange), points (progress indicators), levels (progress milestones), social graphs (representations of social connections), quests (specific challenges), virtual goods (items of value), and teams (groups working together towards common goals).

Werbach and Hunter's model is undoubtedly valuable for understanding the core elements of gamification. However, alternative theoretical approaches are also worth taking into consideration for the development of gamified systems. Notably, the Smart Gamification Model proposed by Kim (2010, in Topal & Karaka 2022: 15) conceives it as an active journey the player undertakes towards the mastery of specific skills, as is exemplified below:

Player Journey = Lifecycle (Novice → Expert → Master) + Progression

Kim (ibid.) argues that effective gamification design prioritises meaningful experiences, shifting the focus from external rewards to intrinsic motivation. Throughout their journey the players would evolve from novices to experts, ultimately mastering the game. Therefore, this model highlights the need to tailor the gamified experience to the player's level of expertise. For example, novice players benefit from onboarding and guidance, while advanced players seek out more competitive

challenges and content, offering greater autonomy (ibid.). In this view, personalization based on player level is essential for maintaining engagement and facilitating progression (ibid.). The Smart Gamification Model, unlike Werbach and Hunter's framework, shifts the emphasis from structural elements to player development and intrinsic goals.

In the realm of player-centric approaches to gamification, Burke's (2014) model, known as "The Player Experience Design Process" (ibid.: 85) offers another interesting perspective. Originally devised for the marketing industry, this design framework provides a useful methodology for developing engaging gamified experiences and is equally applicable in educational contexts (ibid.). It consists of seven steps:

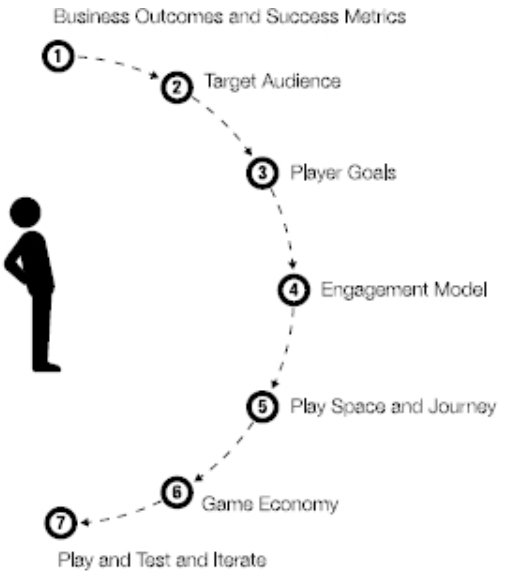


Figure 2. Player Experience Design Process[4]

[4] Image retrieved from Burke (2014: 86).

1. Identify outcomes and measurable success indicators, such as test scores, increased participation rates, higher content retention, enhanced problem-solving skills, or greater collaboration among learners.

2. Understand the audience by categorizing learners into various player types (e.g., achievers, explorers, socializers, or competitors) to tailor the gamified system based on their interests and preferences.

3. Clearly set goals that align with the desired outcomes the players aim to achieve, taking the motivational factor into account.

4. Create a model based on an interaction loop with actions, feedback, and rewards to form a motivational cycle which keeps the players invested in their desire to progress.

5. Define the environment, narrative, and progression of challenges to map out the learner's journey, fostering both skill development and engagement.

6. Design a reward system, consisting of points, badges, virtual currencies or other resources to incentivize the players.

7. The final step, "Play-Test-Iterate", involves the evaluation of the gamified system with small learner groups to assess its performance and understand how users interact with it. Designers collect feedback to identify strengths, weaknesses, and any potential issue to optimise the experience before full-scale implementation.

Burke's model highlights the importance of tailoring gamification to meet the needs of the players, concurrently ensuring the achievement of learning outcomes. Its focus on iterative design and player experience makes it particularly suited to educational contexts, where engagement and adaptability are two crucial aspects (Macklin & Sharp 2016). This approach allows educators and designers to develop gamified activities that are both pedagogically sound and user-centric (Rodrigues et al. 2022; Klock, Gasparini & Pimenta 2019).

While the frameworks outlined above offer useful guidance for designing gamified experiences, it is just as important to consider how these approaches actually translate into educational practice. In this light, distinguishing between structural and content gamification helps clarify how game elements are incorporated into learning environments in different ways. Structural gamification enhances engagement by integrating mechanics such as progress bars, leaderboards, badges, or points into a lesson without changing the instructional content (Kapp 2012). Conversely, content gamification modifies the learning material itself, which may be embedded in game-like narratives or contexts to make the experience more immersive and engaging (ibid.). For instance, a history class can be reimagined as a role-playing game where learners take on the roles of historical figures, or a math lesson could become a mission where solving problems unlocks new levels or resources (see Moseikina, Toktamyso & Danshina 2022; Jutin & Maat 2024). In such cases, the content is modified to help students grasp and retain notions more effectively.

Optimal gamification bridges theory and practice, providing alternative learning approaches that may outperform traditional methods in certain contexts. By adopting the strategies and models earlier discussed, educators and designers can create versatile learning scenarios that meet diverse learner needs, enhancing participation and driving positive outcomes.

1.4.3. Digital Game-Based Learning (DGBL)

Digital Game-Based Learning (DGBL) involves the integration of popular video games originally designed for entertainment purposes into educational settings to enrich the learning experience (Concilio & Braga 2022). This approach has recently gained significant traction, leading to the assimilation of renowned titles from the gaming industry (e.g., *SimCity* and *Minecraft*) into classroom curricula (ibid.).

The effectiveness of DGBL stems from the notion that when educational content is integrated into gameplay, students forge a natural connection between playing and learning (ibid.). This approach presents numerous advantages compared to traditional methods, as it offers a more stimulating and enjoyable learning experience, actively engaging participants within the game environment (Zwikael & Gonen 2007). Consequently, the immersive quality of DGBL enhances motivation and sustains interest throughout the learning process.

DGBL simulations also provide an effective platform for developing teamwork skills. Hence, through collaborative decision-making, players emulate real-world team dynamics thereby acquiring essential soft skills (Avramenkos 2012).

Furthermore, learning through digital games creates a safe space where participants can explore various strategies, stimulating their creativity and incentivizing out-of-the-box thinking without fear of failure (Zwikael & Gonen 2007).

Finally, this methodology facilitates immediate feedback, enabling players to receive instant evaluations of their actions and decisions (Avramenkos 2012). Hence, learners are prompted to stimulate self-reflection, deepening their understanding of the subject matter (ibid.).

1.4.4. A Brief Historical Overview of Digital Game-Based Learning (DGBL)

The origins of gamified learning software date back to the mid-1980s, marked by iconic titles, such as *Where in the World Is Carmen Sandiego?* and *The Legend of Zelda* (Pavlidis & Markantonatou 2022). *Carmen Sandiego*[5] emerged as a pioneering educational computer game, introducing players to a series of detective missions. In 2015, a modern revival, namely, *Carmen Sandiego Returns* was launched by Houghton Mifflin Harcourt, serving as a social studies puzzle adventure game, compatible with Microsoft Windows and iOS platforms, designed to educate younger users about world geography and culture (ibid.).

Similarly, *The Legend of Zelda*[6], an acclaimed fantasy video game series published by Nintendo, has made significant strides in the realm of educational gaming. Blending action, adventure, and puzzle-solving elements, it has left an indelible mark on interactive learning. The franchise's enduring appeal is evidenced by the release of 19 distinct versions on Nintendo consoles from 1986 to 2023[7].

In the late 1980s, a new wave of educational games surfaced, with *SimCity* leading the charge, which paved the way for the monumental success of *The Sims*. *SimCity* revolutionised the genre with its innovative open-ended city-building gameplay (Gaber 2007), whereas *The Sims* revolves around creating and maintaining a thriving and peaceful community, reflecting real-life scenarios (Squire et al. 2003).

Furthermore, the 1990s witnessed the rise of *Civilization*, a turn-based strategy video game, tasking players with the building and advancement of an empire across time, from ancient to contemporary and even future ages (Voorhees 2009).

With the rapid development of 3D technology in the early 21st century, gaming platforms underwent significant upgrades (Pavlidis & Markantonatou 2022). This led

[5] See the official website of *Carmen Sandiego*: <https://www.carmensandiego.com/>.
[6] See the official website of *The Legend of Zelda*: <https://zelda.nintendo.com/>.
[7] See the official website of *Nintendo Japan*: <https://www.nintendo.com/jp/index.html>.

to the emergence of new games featuring enhanced graphics, gameplay, and online multiplayer functionalities, thus offering users more immersive experiences (ibid.). On this account, in 2003 *EVE Online* was introduced as a virtual world, positioning itself as a Massively Multiplayer Online Role-Playing Game (MMORPG) set in a science fiction space environment, where players partake in a multitude of in-game professions and activities, including mining, piracy, manufacturing, trading, exploration, and combat[8].

Following the debut of *EVE Online*, *World of Warcraft* (*WoW*) was launched as an MMORPG, quickly enjoying tremendous commercial success, and earning a place in the Guinness World Records as the most widely subscribed online video game[9]. Similar to other MMORPGs, in *WoW* players navigate their character avatars through the game world in first or third-person view, and engage in a wide array of activities, such as exploring landscapes, fighting monsters, fulfilling quests, and interacting with non-player characters or fellow players (Rama et al. 2012). As avatars progress, they acquire diverse talents and skills, opting for a set of professions, including tailoring, blacksmithing, or mining, while also mastering secondary skills such as archaeology, cooking, fishing, and first-aid.

With the evolution of technology and educational methodologies, more sophisticated software programmes entered the gamified learning market. In 2005, *Brain Age*, a puzzle game designed by Japanese Neuroscientist Dr Ryuta Kawashima, was released with the goal of enhancing users' mental processes[10]. Moreover, two years later, *Wii Fit* made a significant impact on the exergaming industry, bringing

[8]See the official website of *EVE Online*: <https://www.eveonline.com/>.
[9]Williams, B. (2009, August 14). "Video: Backstage at BlizzCon 2009. Thousands of World of Warcraft fans descend on southern California for Blizzard's epic gaming convention", *The Telegraph*. Retrieved April 8, 2024 from <https://www.telegraph.co.uk/technology/video-games/6081496/Video-Backstage-at-BlizzCon-2009.html>.
[10]Ronaghan, N. (2021, December 2). "Braining is Good: A Brief History of Brain Age", *NintendoWorldReport*. Retrieved April 8, 2024 from <https://www.nintendoworldreport.com/feature/59072/braining-is-good-a-brief-history-of-brain-age>.

innovative strategies to boost player engagement. This was achieved by championing a pioneering technology known as multimodal interaction, which adeptly integrates gestures and voice commands in order to facilitate physical activity (Deutsch et al. 2011).

By around 2010, the adoption of DGBL in course design and curriculum development saw significant growth. This surge was propelled by the launch of *Minecraft* in 2009, which reshaped the gaming landscape in many ways, shifting away from graphics realism and prioritising the innovative concept of player-driven narrative, based on user-generated content and online sharing (Callaghan 2016). This innovative video game offers players a sandbox experience (Ekaputra, Lim & Eng 2013), where they can create complex structures using textured cubes within a 3D environment generated procedurally[11]. With the official release of *Minecraft Education Edition* in 2016 (Baek, Min & Yun 2020), course instructors have leveraged its open-world platform to engage students in various subjects, with the purpose of fostering creativity, collaboration, and problem-solving skills (Hobbs et al. 2019).

To conclude, over time technology advancements have led to a growing recognition within the educational community of the benefits offered by DGBL (Pavlidis & Markantonatou 2022), contributing to the unprecedented success video games have gained as educational resources, which promote a positive learning approach while nurturing critical thinking, creativity, and knowledge transfer (Behnamnia, Kamsin & Ismail 2020). The ever-expanding possibilities offered by gaming platforms and software programmes continue to shape the educational landscape, ensuring that DGBL remains a relevant tool for the holistic development of students. Therefore, according to Molin (2017), it is essential for educators to stay abreast of the latest trends in the video game market in order to employ them for more enriching learning experiences.

[11] See the official website of *Minecraft*: <https://www.minecraft.net/it-it/about-minecraft>.

1.4.5. Serious Games (SGs)

In the fast-paced world of contemporary education the need to embrace new and innovative learning methods has led to an increasing interest in Serious Games (SGs), which have the potential to revolutionise the process of learning and skill development (De Troyer 2017).

SGs have carved a niche as sophisticated tools, which leverage the alluring nature of gaming to achieve targeted learning outcomes. It should be emphasized that the idea of using games for purposes other than entertainment has ancient roots: Chess, for instance, has been used for centuries to teach strategic thinking (Ritterfeld, Cody & Vorderer 2009). However, the modern concept of SGs draws from practices where games are intentionally designed with educational or training objectives in mind (Wattanasoontorn et al. 2013; Fleming et al. 2017).

The philosophical concept of combining serious matters with gameful approaches, known as *serio ludere*, can be traced back to the works of Neo-Platonists, who advocated for this approach in literature (Djaouti et al. 2011). Yet, the formal inception of the phrase "serious games" (Muscio et al. 2015: 2) is attributed to Clark C. Abt who first coined it in 1970 as an umbrella term referring to games designed with an educational or problem-solving intent, extending beyond mere amusement into structured, goal-oriented activities (ibid.). In the 1980s, the onset of the "Digital Revolution", marked by the proliferation of personal computers, provided fertile ground for interactive simulations, which would catalyse the growth of the SGs sector (Johnson, Vilhjálmsson & Marsella 2005). Nonetheless, it was not until the late 1990s that instructional games began to gain prominence (Schmitt 2007), and this trend gained further traction in the digital realm when the Serious Game Initiative was launched in 2002 by David Rejeski and Ben Sawyer in the United States (De Gloria et al. 2014). Since then, the spread of mobile and web-based technologies has greatly expanded the applicability of these digital learning tools, now widely employed in

varied sectors, including education, training, defence, health, communications, marketing, and politics (Alvarez & Djaouti 2012).

In the field of SGs, identifying a clear-cut definition for this concept remains a challenging issue, given the array of diverse interpretations found in scholarly literature. The attempt is made even more complex by the existence of seemingly interrelated domains, such as E-learning and Edutainment. The former broadly refers to the use of computer technology to enhance educational experiences, including those that involve distance learning (Hodson, Connolly & Saunders 2001). Conversely, the latter is a portmanteau carrying the meaning of "education through entertainment" (Michael & Chen 2006: XV), which gained popularity with the expansion of the multimedia PC market in the 1990s (ibid.). Edutainment products primarily targeted young learners, aiming to help them acquire basic skills in reading, mathematics, and science (Susi, Johannesson & Backlund 2007). However, this approach eventually faced criticism for producing what was referred to as "boring games and drill-and-kill learning" (Van Eck 2006: 18), thus questioning its educational value.

Nevertheless, while E-learning may encompass a wide range of computer-based educational methods which may not necessarily involve the integration of entertainment elements, SGs could be viewed as a specialised subset of E-learning, distinctly blending educational content with recreational attributes, as pointed out by Koubek and Macleaod (2004). Nor should SGs be oversimplified as edutainment. In this regard, some experts in the field (e.g., Michael & Chen 2006; Ratan & Ritterfeld 2009) maintain that edutainment constitutes only a segment of the broader applications and potential that these digital tools offer.

In the complex SGs ecosystem, however, several definitions stand out as particularly influential. For instance, Zyda (2005) describes them as:

> "a mental contest, played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives." (ibid.: 26).

Abt (1987) conversely elaborates on their intended pedagogical role, arguing as follows:

> "[Serious Games] have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement. This does not mean that serious games are not, or should not be, entertaining".

This point of view aligns with Michael and Chen (2006), who contend that SGs are designed not with "entertainment, enjoyment, or fun as their primary purpose" (ibid.: 21) since they provide experiences, which are more centrally concerned with "education in its various forms" (ibid.: 17).

Based on the reviewed definitions, it is evident that SGs are predominantly considered as dedicated educational instruments that leverage ludic strategies to achieve specific learning objectives. Consequently, there is a risk of drawing superficial parallels between learning through SGs and DGBL, as they may exhibit shared features while fundamentally differing in their approach and design ethos. DGBL involves the utilisation of commercially-produced video games originally crafted for entertainment and subsequently adapted for educational purposes within academic curricula (Concilio & Braga 2022). In contrast, SGs are meticulously conceptualised from the outset with the primary intention of educating (Salen & Zimmerman 2004). This core difference in terms of design philosophy stresses that SGs are purpose-built to deliver educational content, ensuring that every aspect of the game directly aligns with pedagogical aims, whereas DGBL adaptively repurposes the engaging elements of mainstream video games to support learning outcomes in a more indirect manner.

In examining the impact of SGs, it is essential to assess the extent of the purported benefits they may offer. These tools provide interactive simulations that give learners the opportunity to immerse themselves in experiences typically unattainable in the physical world, due to factors such as risk, cost, or temporal limitations (Squire & Jenkins 2003). Accordingly, their significant contribution to the enhancement of learning is widely recognised, corroborating their value in educational development (van Eck 2006; Squire & Jenkins 2003).

Nonetheless, the employment of SGs in the digital sphere, has raised various concerns, which include health-related issues, ranging from repetitive strain injuries to headaches, as well as psycho-social ramifications such as mood instability, increased isolation, and the promotion of less socially favourable attitudes (Mitchell & Savill-Smith 2004). Cowley et al. (2013) also highlight certain drawbacks, particularly linked to the interplay between cognitive workload[12] and educational outcomes. On this account, some features integral to SGs would significantly increase the levels of cognitive load, thus hindering the absorption and retention of new information (ibid.). Furthermore, Whitton (2012) stresses that teachers often lack the time or expertise to create educational games, and having them designed by professional developers is overall prohibitively expensive and unfeasible. A further issue worth stressing is that not all games are underpinned by sound learning theories, which can lead to suboptimal educational outcomes. This underscores the need to carefully address the issue concerning the design of SGs to ensure they meet specific learning standards (see Annetta 2010; Garris, Ahlers & Driskell 2002; Gunter, Kenny & Vick 2006; Sweetser & Wyeth 2005; Connolly et al. 2012; Gómez & Suárez 2021; Schmitz, Klemke & Specht 2012).

[12] Cognitive workload refers to the amount of mental effort required to complete a task or learn new information, and it is a critical factor in determining how well we can learn and retain knowledge. An optimal level of cognitive workload can enhance learning, but an excess of it can lead to overload and diminish the effectiveness of educational experiences (for a more comprehensive analysis of the topic, see Sweller 1988; Sweller 1994; Sweller, Ayres & Kalyuga 2011).

In terms of their positive effects, SGs have been recognised for bolstering a diverse array of skills, including analytical and strategic thinking, complex problem-solving abilities, improved physical coordination and selective visual attention (Granic, Lobel & Engels 2014). Furthermore, they contribute to improved self-monitoring, and sustained memory retention (Wouters & van Oostendorp 2017). SGs are also instrumental in cultivating social skills (e.g., collaboration, negotiation, and joint decision-making), essential in both educational and professional contexts (Zheng et al. 2021). Moreover, an analysis of 46 empirical studies, as reported by Lamb et al. (2018), suggests that the use of these learning tools may instil a positive emotional state during the learning process, so that an increase in overall mood satisfaction among players who utilised SGs resulted in better educational achievements (ibid.).

As emphasized in this chapter, game-informed methodologies tend to be increasingly integrated into educational practices. Therefore, a natural question arises:

- What makes games in general – and SGs more specifically – so engaging and potentially effective for learning to the extent that they are sometimes favoured over traditional teaching methods in certain contexts?

Van Eck (2006) posits that the efficacy of games in an educational setting does not derive from their ludic features *per se*, but rather from the meaningful activities that players undertake within a digital environment. This notion is reinforced by the principle that learning is most impactful when it takes place within a context that is relevant to the learner, a key tenet that has long been emphasized in the study of situated cognition (Rogoff 2003; Gee 2004). Furthermore, the appeal of gaming lies in its power to stir emotions and cultivate a sense of attachment (Scott, Casey & Kane 2022). Their design draws on multimodal resources (Cardoso Garone, Nesteriuk & Belluzzo de Campos 2020) to engage players on multiple sensory levels, creating rich and memorable learning experiences.

1.5. Different Applications of Serious Games

Serious Games (SGs) are employed in a variety of fields to fulfil specific objectives. Notable examples include military and governmental games, delivering specialised training in strategic planning and decision-making, and educational games designed to facilitate learning and skill development in both formal and informal educational contexts (Muscio et al. 2015). In addition, within the healthcare sector, these tools are being widely used to enhance cognitive functioning and physical abilities, contributing to improved health and well-being (Alvarez & Djaouti 2012).

1.5.1. Military Games

Military games are used for tactical training or strategic planning, offering a safe and cost-effective approach to prepare personnel for complex scenarios (Mun et al. 2017). They allow soldiers to engage in simulated combat situations, improving decision-making and response times without the risks associated with live exercises (ibid.). Released in 2002, *America's Army* stands as a landmark example of gaming technology applied to real-world defence operations (Raybourn 2014).

SGs also play a crucial role in helping armed forces develop language skills and cultural awareness, which are essential for missions in diverse regions worldwide. For instance, *Tactical Iraqi*, developed in 2003 by the University of Southern California's Information Sciences Institute, aims to facilitate effective communication in Arabic while introducing users to Iraqi customs and cultural norms (Johnson 2010).

The value of SGs further extends into medical training, particularly for frontline healthcare professionals, who benefit from virtual environments to practise essential procedures (Graafland, Schraagen & Schijven 2012). Simulations such as *Combat Medic* are specifically designed to enhance expertise in emergency care, focusing on

triage and treatment under high-pressure conditions (Brown et al. 2016). These tools help medical staff refine their skills before facing critical, real-life situations.

1.5.2. Governmental Games

SGs are employed in governmental sectors to tackle a variety of tasks and situations, including managing crises such as terrorist attacks, disease outbreaks, and biohazards (Michael & Chen 2006). Additionally, they serve as training tools in areas related to healthcare policy development, urban planning, traffic management, fire-fighting, budget allocation, ethics education, and defensive driving (ibid.). One of their key strengths is that they can simulate these scenarios multiple times, with adjustable levels of complexity, keeping costs for staff and material relatively low (Susi, Johannesson & Backlund 2007). Aligned with the principles and scopes of virtual training, governmental games provide a safe environment to practise handling situations that would otherwise be too dangerous, expensive, or impractical to replicate in traditional training (Madani, Pierce & Mirchi 2017).

The application of SGs in governmental contexts is demonstrated by several impactful projects that address pressing societal challenges. An illustrative case is *FloodSim* (Rebolledo-Mendez 2009). Developed by PlayGen, a London-based leader in gamification and SG development, this interactive simulation aims to deepen public understanding of flood policy, by allowing players to evaluate the outcomes of decisions related to flood prevention and response[13]. Its ultimate goal is to promote active engagement in environmental governance and raise awareness of the challenges associated with resource allocation (Rebolledo-Mendez 2009).

Focusing on fiscal policy, *Budget Hero* stands out as an innovative tool for educating citizens on federal U.S. budget allocation. American Public Media, a

[13] See *Games4Sustainability*: <https://games4sustainability.org/gamepedia/floodsim/>.

nonprofit organization, designed the game in order to test players' ability to make critical decisions on spending and taxation (Bengston et al. 2022).

Conflict resolution is another area where SGs have proven effective. *A Force More Powerful*, released by BreakAway Games in partnership with the International Center on Nonviolent Conflict, focuses on teaching peaceful strategies for addressing disputes[14]. In a similar vein, *PeaceMaker*, created by ImpactGames, puts players in the heart of the Israeli-Palestinian conflict, where they take on the roles of leaders of either side and are tasked to make vital political, social, and military decisions[15]. Through this experience, the game offers valuable lessons on leadership and negotiation.

1.5.3. Healthcare Games

In recent years, SGs have gained increasing attention in the healthcare sector, particularly in the areas of physical rehabilitation and cognitive training (Bonnechère 2018). Notably, the application of these tools in addressing age-related neurocognitive disorders has been fuelled by an expanding body of research highlighting their potential as promising non-pharmacological alternatives to conventional treatments for the early detection and monitoring of both physical and mental impairment (Fleming et al. 2017).

To better understand the impact of SGs in this field, it is important to first address the typical challenges associated with aging which predominantly affect older adults. Neurodegenerative Disorders (ND) involve a gradual decline in the nervous system's functionality over an extended period, eventually progressing to dementia. Dementia is marked by a significant deterioration in cognitive abilities, considerably disrupting

[14] See the Official Website of *A Force More Powerful*, developed by BreakAway Games: <https://www.breakawaygames.com/case-studies/a-force-more-powerful/>.
[15] See the Official Website of *PeaceMaker*, developed by ImpactGames: <http://www.impactgames.com/peacemaker.php>

daily life (Thapa et al. 2020). Among its various causes, Alzheimer's Disease (AD) is the most prevalent and is often preceded by Mild Cognitive Impairment (MCI), characterised by a noticeable decline in cognitive abilities that does not yet substantially interfere with everyday activities (ibid.).

Dementia is acknowledged as one of the most pressing health concerns of the 21st century. As of 2020, it was estimated that 50 million people worldwide were affected by this condition[16]. However, projections suggest that the number of cases will continue to rise significantly to 75.6 million in 2030 and 139 million in 2050 with profound social and economic implications (World Alzheimer Report 2024).

As conventional pharmacological treatments continue to fall short of providing a definitive solution, researchers are increasingly turning to supplementary strategies in order to slow the progression of MCI (Thapa et al. 2020). Among these, SGs are regarded as promising tools that could help mitigate cognitive decline and preserve brain function (Muscio et al. 2015). A study by Anguera et al. (2013) reported significant gains in terms of sustained attention and working memory following SG interventions. Similarly, Nouchi et al. (2012) indicate that such training methods can enhance executive functions and processing speed in older adults, even after short-term treatments. These findings also suggest that cognitive improvements observed in controlled settings could be applicable to everyday situations (Muscio et al. 2015). Furthermore, neurophysiological evidence reveals that these positive outcomes are linked to SG-based therapies which stimulate brain neuroplasticity (Anguera et al. 2013). However, despite their potential, conclusive evidence validating their long-term efficacy remains scarce, emphasising the need for further research (Robert et al. 2014).

In the context of SGs implemented for therapeutic purposes, much of the existing literature focuses on commercial video games, such as *Wii Fit*, *Wii Sports*, and *Lumosity*, originally designed for entertainment and intended for healthy individuals

[16] World Health Organization (WHO). Dementia. Available online: <https://www.who.int/news-room/fact-sheets/detail/ dementia>.

(Young et al. 2012). However, they are now being explored in clinical settings for their estimated positive impact for the treatment of dementia-related disorders (McCallum & Boletsis 2013).

In the healthcare context, SGs are commonly classified into two broad categories. Exergames, which aim to promote physical wellness and aerobic fitness, contribute to better mobility in patients with mild AD and MCI, enhancing balance, gait (Swinnen et al. 2021), and voluntary motor control (Legouverneur et al. 2011). Cognitive games, on the other hand, can boost brain performances particularly in terms of attention and memory (Anguera & Gazzaley 2015), as well as visuospatial skills (Spence & Feng 2010). Moreover, both categories can positively influence social and emotional well-being by boosting mood, encouraging social interactions (Zheng et al. 2020), and reducing symptoms of depression (Anguera, Gunning & Areán 2017).

1.5.4. Educational games

Educational games (or edugames) are a distinct subset of SGs, designed to facilitate learning and skill development across various contexts. However, since SGs broadly aim to teach and develop targeted competencies, edugames differ in their objectives, audience, and contexts of use compared to other categories.

Unlike games developed for specialised training or therapeutic purposes, edugames deliver more general-purpose knowledge across a range of subjects, including – but not limited to – mathematics, science, history, and foreign languages (Vandercruysse, Vandewaetere & Clarebout 2012). They are highly versatile, supporting both structured learning aligned with curriculum standards and exploratory learning that encourages creativity and curiosity (Noemí & Máximo 2014).

They may appeal to users of all ages and walks of life, from young children and teenagers in formal classroom settings to adults engaged in informal education (Charlier et al. 2012). Designed to accommodate various learning scenarios, they serve

as valuable tools for teachers, students, parents, and self-directed learners alike (Toh & Kirschner 2020).

Edugames are employed in a variety of contexts, extending beyond schools and universities to involve more informal spaces, such as homes, libraries, and community centres (Protopsaltis et al. 2011). Their high adaptability allows them to complement traditional teaching methods or serve as standalone tools for self-guided learning (ibid.).

In the context of Second Language Acquisition (SLA), simulation technology enhances the effectiveness of edugames as tools for L2 learning (Peterson 2009). Immersive and interactive virtual environments provide meaningful contexts for communicative interaction, ultimately fostering foreign language development in an engaging and practical way (Blyth 2018). From both psycholinguistic and sociocultural perspectives, simulation-based games support authentic language use, by offering learners opportunities for negotiation of meaning and collaborative dialogue (Peterson 2009).

Massively Multiplayer Online Role-Playing Games (MMORPGs) are a category of simulation games originally conceived for entertainment purposes, yet they offer valuable opportunities for language learning in informal contexts (Jabbari & Eslami 2018), as players immerse in virtual worlds where effective communication is critical for success. This naturally motivates them to acquire and practise language skills (Thorne 2008). Research highlights the positive impact of MMORPGs, such as increased confidence in using a foreign language in digital environments and improved communicative competence (Reinders & Wattana 2014).

Cooking games represent another notable example within the domain of simulation with educational potential (Bista & Garcia-Ruiz 2021). According to *Moby Games*[17], they are defined as "any game where cooking (or other forms of food

[17] Founded in 1999, *MobyGames* is a commercial website that stores information on video games, including details about the people and companies involved, through crowdsourced contributions. Its

preparation) is a central gameplay mechanic"[18]. Due to a combination of educational and interactive aspects related to meal preparation, these games fit within the category of SGs, as their applications extend beyond mere entertainment (Manera et al. 2017). This is evidenced by the practical training opportunities they offer, such as promoting nutrition and food literacy, and teaching specialised skills related to restaurant management, waitressing, and culinary arts (Mitsis et al. 2019).

Cooking games can also effectively support SLA by involving players in task-based activities, i.e., following recipes and preparing dishes, that expose them to culturally rich content[19]. This approach allows learners to engage in meaningful language use while simultaneously exploring cultural aspects of food, making cooking games a valuable resource for both L2 learning and intercultural awareness (see Seedhouse 2017).

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database covers nearly 300,000 games across 332 different platforms, such as the 3DO Interactive Multiplayer, Amiga, Atari 2600, Commodore 64, and Windows. (see Wikipedia: <https://en.wikipedia.org/wiki/MobyGames>; the Official *MobyGames* Website: <https://www.mobygames.com/platform/?utm>).

[18] See: <https://www.mobygames.com/group/9694/genre-simulation-cooking/>.

[19] For a more detailed discussion of Task-Based Language Teaching (TBLT), refer to the works of Long (1985), Ellis (2003), Nunan (2004), and Seedhouse (2017), each offering an in-depth analysis of its theoretical foundations and applications. It should be pointed out that TBLT, which evolved from Communicative Language Teaching (CLT), has become key in foreign language instruction due to its focus on "authentic tasks" designed to promote meaningful interaction and negotiation in the target language (Spada 2007: 272). This methodology is highly learner-centred, and is based on the idea that tasks help develop both productive and receptive language skills (Long 1985; Nunan 2004). Unlike traditional exercises, tasks aim to encourage learners to use language relevant to real-life situations, rather than focusing exclusively on grammatical forms (Ellis 2003).

TBLT draws on psycholinguistic, cognitive, and sociocultural theories of language learning. From a psycholinguistic perspective, it emphasizes the role of interaction, laying special emphasis on negotiation of meaning (Seedhouse 2017). When students struggle with language, they rely on interactive cues (i.e., clarification requests and feedback) to avoid misunderstandings and enhance comprehension (Long 1985). Cognitively, tasks promote greater fluency and accuracy by challenging learners to process information, organise their thoughts, and produce the target language in real-time (Skehan 2003). Finally, a sociocultural approach adopted in TBLT highlights the key role of scaffolding, as students working on a specific task naturally engage in discussions that require them to collaborate, share and apply their knowledge, strengthening their L2 productive skills (Lantolf 1994).

In this section varied applications of SGs have been explored, highlighting how simulation technology enhances their learning potential and helps users acquire skills that can be directly transferred in real-world situations. The analysis considered their use in military and governmental contexts, before turning to healthcare and education – two domains which more closely align with the central goal of this research project, whose purpose is to investigate how these tools support Foreign Language Learning (FLL) for older adults in order to prevent cognitive decline. This is an aspect that has received limited attention so far.

1.6. Engagement, Motivation, and Flow

Throughout this chapter, it has been emphasised that Digital Game-Based Learning (DGBL), gamification, and Serious Games (SGs) can boost engagement and motivation, providing meaningful outcomes in terms of knowledge acquisition and skill development (Hamdaoui, Idrissi & Bennani 2022; Whitton 2011b). However, while these aspects have been touched upon, they have yet to be explored in depth. A closer investigation is indeed necessary to fully understand how involvement is maintained and why it matters for learning.

Neuroscientific research has shown that the challenge-success-reward loop typical of games can trigger dopamine release in the brain, reinforcing motivation and contributing to a deep sense of enjoyment (Zichermann & Cunningham 2011). This neurochemical response helps explain why games are often experienced as inherently pleasurable, offering a first clue as to how they might sustain engagement over time. This invites further inquiry into the conditions under which game-informed approaches can effectively support learning. To this end, the following questions should be taken into account:

- How do engagement and motivation contribute to enhance the learning process in educational contexts?

- What psychological mechanisms help maintain involvement and enthusiasm during learning activities?

- What features should a well-designed educational game have?

Addressing these issues requires an analysis of how emotional, cognitive, and behavioural factors shape meaningful learning experiences. This also implies examining the role of intrinsic and extrinsic motivation, as well as Csikszentmihalyi's Flow Theory. Nevertheless, before delving into these aspects, it is worth first considering how game genres influence player engagement by appealing to different tastes, shaping expectations, and fostering deep connections with the gameplay experience.

1.6.1. Game genres and Learner Preferences in Educational Game Design

Players enjoy games for various reasons, from their unique qualities to the deep sense of immersion they offer, appealing to the senses and leaving a profound impact (Scott, Casey & Kane 2022). Creating a memorable and amusing gameplay experience requires understanding what makes it truly compelling. What one person finds fun, another may perceive as dull or frustrating. Hence, to reach diverse audiences, game developers must strategically cater to different interests and needs, making engagement a priority in order to ensure the game's positive reception (ibid.). This is where genres become essential, as they shape expectations influencing how players connect with games (ibid.). Considering the role of genres in entertainment games

offers valuable insights for the design of educational games, suggesting strategies to sustain interest and enhance long-term learning.

Genres serve as classification systems, which help guide consumers in the video game market (Apperley 2006). Just as people choose movies or TV shows based on genres, commercial video games are divided into distinct types, such as action, shooter, role-playing, adventure, racing, fighting, strategy, and casual games (ibid.). These categories allow players to make informed choices that align with their tastes and interests.

Learners, just like entertainment consumers, have varied preferences in the way they acquire notions and skills, depending on different learning styles (Rapeepisarn et al. 2008). For example, those who excel in problem-solving and analytical thinking might show an inclination for strategy games (Adachi & Willoughby 2013). On the other hand, some may favour a kinaesthetic approach, potentially opting for action or adventure games (Gee 2005). As a result, matching learners with suitable genres based on their learning styles maximises the overall learning experience, as research suggests (see Gee 2004; Gee 2005; Rapeepisarn et al. 2008; Khenissi et al. 2016).

1.6.2. Engagement and Motivation

Exploring the interplay between engagement and motivation is crucial for understanding the effectiveness of well-designed educational games. Although closely related, these aspects have distinct roles in the learning process. Motivation is the driving force behind an individual's willingness to participate in a given activity, providing the energy and purpose for sustained commitment (Martin, Ginns & Papworth 2017). Conversely, engagement is the observable outcome, expressed through attitudes, behaviours, and cognitive involvement (ibid.). In other words, engagement is the visible result of motivation, shaping how students approach a task

(ibid.). Examining these two dynamics separately will provide deeper insight into their defining features and influence on learning.

Motivation depends on either extrinsic or intrinsic factors (Ryan & Deci 2000b). Extrinsic motivation arises from external incentives, prompting individuals to carry out activities in exchange for rewards or as a means of avoiding negative consequences (Bear et al. 2017). In the context of formal education, this often involves grades, praise, or career prospects (ibid.). Although these aspects may encourage participation and commitment, they do not necessarily lead to deep learning unless combined with elements that spark genuine interest (ibid.). A comparable pattern can be observed in digital educational games, where extrinsic motivation may be encouraged through mechanics such as points, badges, and leaderboards, setting clear goals with the support of progress markers (Kapp 2012). Yet, they often sustain involvement only in the short term (Chou 2015). When learners mainly rely on these types of reinforcements, their dedication may become contingent on external rewards rather than the learning experience itself (ibid.). As a result, once the novelty of the incentives wears off, participation may decline leading to superficial rather than meaningful interaction with the game's content (ibid.).

Intrinsic motivation is driven by a sense of enjoyment and personal curiosity, rather than external influences (Ryan & Deci 2000b). In educational settings, intrinsically motivated students approach learning because they find it fulfilling, whether they are naturally inclined towards a subject, stimulated by the intellectual challenge it presents, or perceive it as valuable for their personal growth and future opportunities (Froiland & Worrell 2016). Likewise, certain educational games may have an inherent appeal, making learning more compelling (Calvo-Ferrer 2017). For example, a language game that lets players interact with characters in the target language can create an immersive experience by making communication feel meaningful and immersive. Rather than memorizing vocabulary for a test, players use

the language naturally to solve problems, complete tasks, and engage in conversations, making L2 acquisition more pleasant and personally rewarding (ibid.).

The factors supporting intrinsic motivation have been extensively studied in psychological and educational research. In this context, Ryan & Deci's (2000a) Self-Determination Theory (SDT) is particularly influential, highlighting three fundamental psychological needs to fulfil:

- Autonomy: Learners must feel in control of their actions and decisions. When they engage in activities without external pressure, their sense of autonomy increases. Encouraging self-directed learning, and using supportive rather than controlling feedback can enhance this perception. The more freedom individuals experience in their learning process, the more likely they are to remain intrinsically motivated.

- Competence: Feeling capable of handling a task is crucial for motivation. When learners deal with appropriately challenging activities that push them to develop new abilities, their confidence and persistence grow. Providing constructive feedback, opportunities to practise, and gradually increasing the level of difficulty help build mastery, reinforcing an inner desire to keep improving.

- Relatedness: Social connection and a sense of belonging significantly impact motivation, as people are naturally inclined to seek recognition within a community. In both traditional learning and digital educational games, environments that encourage collaboration and peer interaction foster meaningful relationships and active participation which may contribute to deeper engagement and better performance overall.

However, motivation alone does not fully explain the processes underlying learner involvement. It is therefore necessary to consider the role of engagement in shaping the way students connect with educational experiences. Engagement is a multidimensional construct encompassing emotional, behavioural, and cognitive aspects (Concilio & Braga 2022).

Emotional engagement refers to the affective responses of students while they are interacting with specific tasks (Whitton 2011a). Feelings of interest, enjoyment, frustration, or anxiety can influence the level of participation (Tyng et al. 2017). When students are positively engaged, they are more likely to immerse themselves in an activity, approaching it with enthusiasm and a deeper sense of connection (Wang & Degol 2014).

Behavioural engagement relates to active involvement in learning, reflected in terms of effort, persistence, and sense of commitment (Law et al. 2017). For instance, this comes through participating in class or completing assignments.

Finally, cognitive engagement is about the mental effort students invest and the strategies they use to process new information effectively (Corno & Mandinach 1983). This involves self-regulation[20], problem-solving, and the ability to stay focused, all of which contribute to better content retention (De La Fuente et al. 2014).

In game-informed learning, engagement can be sustained through specific elements, which help create an environment where players remain receptive to their

[20] Self-regulation refers to the proactive processes that learners use to direct their own progress, integrating motivational, behavioural, and cognitive dimensions (Schunk & Ertmer 2000). Rather than passively absorbing information, those who resort to this approach take an active role in their learning path, making deliberate choices to optimise their outcomes (Rajabi 2012). For example, in an educational game, players may need to set a specific goal to complete a challenge with high accuracy, monitoring their performance, adjusting their problem-solving strategies, or seeking external resources if required (Schunk & Ertmer 2000). Alternatively, in a non-game context, a student preparing for an exam might set study targets, rely on self-quizzing or summarization, and/or consult additional materials (see Zimmerman & Kitsantas 2014). In both cases, this approach encourages adaptability and autonomy in the learning process (Randi & Corno 2000), aligning with Self-Determination Theory (SDT), which emphasizes the importance of personal control and competence in fostering intrinsic motivation (Ryan & Deci 2000a).

goals. As with the entertainment field, educational games should also be rewarding, minimize frustration, and enhance participation (Heath, McDaniel & Panchanathan 2022). This may be achieved through the following design features:

- Adaptation and Personalization: Ensuring that gameplay aligns with individual learner needs is crucial for maintaining engagement. Adaptation allows to adjust difficulty based on the player's skills and progress (ibid.). This may imply either increasing the challenge to keep the experience engaging or reducing it to prevent frustration and maintain a positive flow (ibid.). Personalization, in turn, enables players to modify aspects of their gaming experience, such as avatars or interface settings, which strengthens their personal connection to the game (Ku, Hou & Chen 2016). Research suggests that customisation can positively impact engagement across different age groups, although developers should also account for demographic factors, such as gender (Dickey 2006) and ethnicity (Dietrich 2013) to ensure inclusivity.

- Narrative: A strong storyline makes an educational game more engaging (Naul & Liu 2019). This can be achieved through an intriguing plot, relatable characters, stimulating tasks, and clear learning milestones (Heath, McDaniel & Panchanathan 2022). To maintain player interest, it is crucial to weave the instructional content into the narrative (ibid.). This is where the concept of endogenous fantasy comes into play, suggesting that educational elements should be embedded within the story, becoming an inherent part of the experience (Habgood & Ainsworth 2011). This approach ensures that players interact with the material naturally, without perceiving it as separate or secondary to the plot (ibid.). Furthermore, the complexity of the story must align with the developmental stage of the target audience, making the content appropriately tailored to younger or older users, depending on the context

(Heath, McDaniel & Panchanathan 2022). Developers should, therefore, adapt the story on the basis of players' maturity as well as their cognitive and emotional state (see Graesser, Chipman & Leeming 2009).

- Sensory Appeal: Graphics, sound, and haptic feedback[21] work together to create an immersive experience (Heath, McDaniel & Panchanathan 2022). Visual elements can vary from highly realistic reproductions, such as those used in flight simulators, to stylized aesthetics, as in *Minecraft*, depending on specific learning goals and the preferences of the target audience (ibid.). Audio, including sound effects and voiceovers, deepens immersion, while haptics adds a layer of sensory input that makes gameplay more interactive (ibid.).

- Feedback: Effective response systems are essential in educational games to engage and guide learners (Rogers 2017). Immediate feedback provides real-time reinforcement through visual cues or sound effects, encouraging correct decisions and offering suggestions when errors are made (Heath, McDaniel & Panchanathan 2022). This allows players to quickly adjust their strategies (ibid.). Conversely, delayed feedback is given after a task or level is completed, delivering a detailed evaluation, which aims to cultivate intrinsic motivation and maintain ongoing engagement (ibid.). Furthermore, progress indicators – such as milestones bars and unlockable content – serve to visually track and highlight players' achievements, guiding them towards their goals (ibid.). This form of visual feedback is particularly critical in open-world games, where structured guidance is often sparse, leading to potential distractions (Cruz-Benito et al. 2015). It is also particularly beneficial for learners with

[21] Haptic feedback, also known as haptics, refers to the use of tactile sensations to convey information or enhance interaction within digital settings (Orozco et al. 2012). It provides sensory input through vibrations or movements, simulating textures and shapes (ibid.). This technology strengthens the user's connection to the virtual environment, ultimately resulting in a more vivid experience (ibid.).

disabilities, who require additional scaffolding tools (i.e., in-game prompts), to maintain their focus on learning objectives (Marino 2010).

- Social Interaction: Multiplayer dynamics can enhance learning through teamwork and challenge-based engagement (Dindar, Ren & Järvenoja 2021). Collaboration allows players to work together, promoting clear communication, critical thinking, adaptability and problem-solving (ibid.). Participants often take on specific roles within the team, each playing a part in achieving a common goal. In doing so, players strengthen social skills that are essential for both learning and personal development (Dickey 2007). On the other hand, competition can serve as a powerful motivator, encouraging players to improve their performance by presenting challenges that demand perseverance and skill (Cagiltay, Ozcelik & Ozcelik 2015). However, it may not be beneficial for all learners, since those with less confidence or experience might find competitive environments overwhelming or disheartening (ibid.).

- Rewards: Incentive systems in gameplay may support progression through points, badges, trophies, or unlockable content (Heath, McDaniel & Panchanathan 2022). As previously emphasised, when designed effectively, these tools encourage players to continue advancing, reinforcing learning rather than functioning as mere collectibles (see Abramovich, Schunn & Higashi 2013).

- Novelty: A touch of surprise is a hallmark of well-designed games, as players are naturally drawn to experiences that defy expectations and introduce variety (Heath, McDaniel & Panchanathan 2022). Gradually introducing new mechanics, increasing difficulty levels, and adding narrative twists throughout the gameplay helps support engagement and prevents monotony (Hamari et al.

2016). Moreover, technological advancements such as Virtual Reality (VR) and Augmented Reality (AR) further expand opportunities for immersive and interactive learning, transforming traditional educational methods into dynamic experiences (Beck 2019). Therefore, novelty can stimulate curiosity and increase receptivity to educational content (Pavlidis & Markantonatou 2022).

In sum, motivation and engagement are two aspects that game developers must carefully consider in order to grab and maintain attention and enthusiasm (Laine & Lindberg 2020). However, it is particularly important to note that engagement is not merely about keeping interest. It rather involves achieving a state where players become so absorbed in their tasks that the experience feels somewhat effortless and enjoyable (see Csikszentmihalyi 1990; Weibel & Wissmath 2011). Gaining a clearer understanding of this phenomenon requires drawing on cognitive psychology, particularly in relation to how the brain processes and retains new information (see Scott, Casey & Kane 2022; Sweller 1988; Sweller 1994; Sweller, van Merrienboer & Paas 1998; Sweller, Ayres & Kalyuga 2011). In this context, Mihaly Csikszentmihalyi's (1990) Flow Theory deserves closer examination.

1.6.3. Flow Theory

Absorbing new information may sometimes feel intuitive, whereas in other circumstances it requires a great deal of mental effort. The ease or difficulty of this process depends on how cognitive resources are allocated. This is a key issue explored in Cognitive Load Theory (CLT). Originally developed by John Sweller (1988), with respect to problem-solving skills, CLT was later refined to examine its implications for the design of instructional materials so as to optimize learning (Sweller 1994). At its heart lies the concept of "element interactivity" (ibid.: 295), referring to the extent

to which different bits of information must be processed in relation to one another. The more interconnected these elements, the greater the cognitive load required for comprehension (ibid.). Conversely, when elements can be understood independently, cognitive demands are lower, reducing mental strain and enabling learners to acquire and retain new notions more effectively (ibid.).

It should be noted that the learning process is shaped by internal and external factors (Scott, Casey & Kane 2022), making it difficult to predict how an individual would respond to a given task. However, guidelines and principles can be established to minimize mental effort and prevent overload (ibid.). This has been made possible through years of research, during which scholars have attempted to measure cognitive load (see Paas 1992; Sweller, van Merrienboer & Paas 1998; Sweller, Ayres & Kalyuga 2011; Scott, Casey & Kane 2022), classifying it into three distinct types:

1. Intrinsic load, as the name implies, refers to the inherent complexity of the learning material (Scott, Casey & Kane 2022). It depends on how many interacting elements a learner must process simultaneously (Janssen & Kirschner 2020). Some topics are naturally more demanding than others due to their structure, regardless of how they are taught. For instance, solving basic arithmetic problems generally involves low intrinsic load, whereas understanding complex calculus equations requires higher cognitive effort. Although intrinsic load cannot be eliminated, it can be managed through effective teaching strategies (Feldon 2007), such as sequencing information progressively and providing worked examples (Klepsch & Seufert 2021).

2. Extraneous load arises from how information is presented rather than the content itself, making it a key concern in instructional design (Scott, Casey & Kane 2022). Poorly structured materials, unnecessary details, or distracting elements can hinder learning (De Jong 2010), as in cluttered PowerPoint slides

with excessive text, irrelevant visuals, or redundant explanations which force learners to split their attention, increasing mental effort. Unlike intrinsic load, extraneous load should be minimised through thoroughly designed lesson plans that may reduce unnecessary cognitive effort (Van Merriënboer & Sweller 2010; De Jong 2010).

3. Germane load, on the other hand, is related to the process of learning itself and the formation of schemas, that is, mental frameworks that help organise and store knowledge efficiently (Scott, Casey & Kane 2022). Unlike extraneous load, this form of cognitive load is desirable, as it strengthens understanding and promotes long-term retention (ibid.). For instance, problem-solving tasks or self-explanation techniques productively increase it by encouraging students to connect new information with prior knowledge (Klepsch & Seufert 2021).

As has been stressed, excessive cognitive demands overwhelm learners, negatively affecting comprehension (see Paas 1992; Sweller, van Merrienboer & Paas 1998; Sweller, Ayres & Kalyuga 2011; Scott, Casey & Kane 2022). However, insufficient cognitive load can be just as detrimental since overly low mental effort fails to provide enough challenge (Sweller, van Merrienboer & Paas 1998). This, in turn, inhibits meaningful learning (ibid.). It is within this context that Flow Theory becomes particularly relevant. Csikszentmihalyi (1990) defines flow as:

> "[…] the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it" (ibid.: 4).

As Topal & Karaka (2022) point out, flow is best understood as a psychological condition in which an individual experiences deep concentration, reduced self-awareness, and becomes fully immersed in a task beyond the limits of boredom and

anxiety, often losing track of time in the process. At the core of this concept lies the interplay between the difficulty of a task and the skill of the person performing it (Notargiacomo et al. 2022). If the activity is too demanding, it can trigger stress or frustration (ibid.); if it is too simple, it may lead to disengagement or a sense of monotony (ibid.). As illustrated in Figure 3, reaching a state of flow therefore depends on achieving the right level of challenge to keep an individual stimulated without exceeding their abilities.

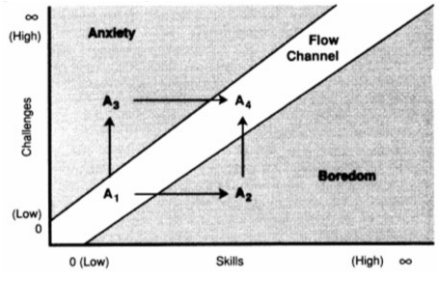


Figure 3. Diagram of Flow (Csikszentmihalyi 1990: 74)

Initially, Csikszentmihalyi (1990) developed this theory to explore how artists immerse themselves in the act of creation and how this influences their work. Nevertheless, over time, scholars have broadened its application to a range of domains, including digital learning games (Kiili 2005).

Seven main components of flow (Csikszentmihalyi 1990) may be identified, some of which resonate with aspects previously discussed in relation to motivation and engagement:

1. Clear Goals: A precise understanding of the task's objectives gives the activity structure and helps orient actions towards a defined purpose.

2. Immediate Feedback: Timely and unambiguous feedback helps players monitor their performance and adjust their decisions accordingly.

3. Concentration: Full absorption in the task is essential, so that distractions need to be minimised, encouraging sustained focus.

4. Challenge-Skill Balance: The task should be sufficiently demanding to sustain interest, yet aligned with the individual's capabilities, avoiding both frustration and boredom.

5. A Sense of Control: Participants should feel that their actions influence the outcome, fostering confidence and agency.

6. Loss of Self-Consciousness: Deep immersion in the activity reduces self-awareness, allowing learners to become fully absorbed in what they are doing.

7. Altered Perception of Time: Time often seems to go by more quickly, when attention is entirely directed towards the task.

In digital games, one factor that can support the experience of flow is the suspension of disbelief, namely, the tendency to momentarily set aside critical judgment and accept the internal logic of a fictional reality (Notargiacomo et al. 2022). This typically occurs when the setting, story, or mechanics, though not necessarily realistic, are presented in a coherent way within the game's own framework (Alexiou et al. 2022). This mechanism echoes in some ways the ludic nature of what Huizinga (1955) called the "magic circle" (ibid.: 10), a conceptual space in which players step outside the boundaries of ordinary life and temporarily adopt the rules of a game-defined world. Should this internal consistency break down, for instance through arbitrary rules or contradictory plot elements, the player's sense of immersion could be significantly disrupted (Notargiacomo et al. 2022). Although suspension of disbelief and flow involve different forms of immersion, they are not mutually

exclusive and may complement each other (ibid.). The first mainly relies on narrative credibility, whereas the latter depends on maintaining an optimal match between task difficulty and player's skills (ibid.). However, a well-constructed game context that addresses both aspects can foster the conditions for flow, helping players remain focused and mentally engaged throughout the activity (ibid.).

The balance between challenge and skill, central to the flow experience, has recently been revisited in relation to cognitive load management.

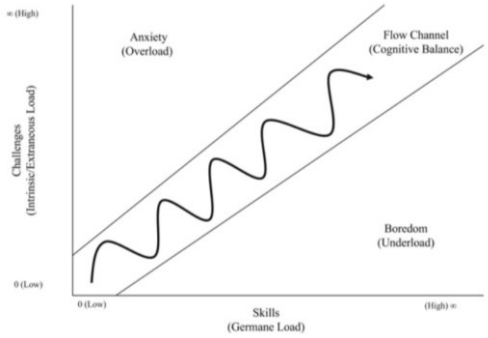


Figure 4. Flow Diagram Combined with Cognitive Load Balance (Scott, Casey & Kane 2022)

In this regard, Scott, Casey, and Kane (2022) report an integrated framework that combines Flow Theory with CLT. This model (Figure 4) positions flow between two cognitive extremes: overload, which can lead to anxiety, and underload, associated with boredom. This perspective reinforces the idea that cognitive balance can be maintained as long as the activity remains engaging and mental effort is appropriately calibrated (ibid.). In digital learning games, this means designers must consider the seven core conditions of flow (Csikszentmihalyi 1990), as previously discussed, to effectively manage the learner's cognitive workload. When content, mechanics, and task progression are well-aligned, they can help sustain engagement leading to meaningful learning outcomes (Scott, Casey & Kane 2022).

Nevertheless, a comprehensive analysis of Flow Theory should also acknowledge its limitations, particularly when it comes to measuring this experience with consistency and objectivity. As Whitton (2011a) points out, some components of flow can be more readily assessed as they are embedded in the game design. The presence of clear goals, high-quality feedback, and well-structured tasks can be verified more rigorously, as these elements do not depend on the participant's internal perception (ibid.). Conversely, loss of self-consciousness, altered perception of time, or the intrinsic pleasure derived from gameplay are all inherently subjective, depending on how the player personally interprets and internalises the activity (ibid.). These aspects can be hardly observed or quantified without introducing potential bias, complicating efforts to evaluate flow reliably, especially in empirical research where standardised methods are required (Fang, Zhang & Chan 2013).

However, over the years, various approaches have been developed to address these gaps. One of the earliest is the Experience Sampling Method (ESM), according to which participants receive prompts at random moments to report on what they are doing and how they are feeling (Hektner, Schmidt & Csikszentmihalyi 2007). While this technique is effective for collecting real-time data across a range of everyday activities (ibid.), it proves less suitable for structured environments or short-duration tasks (Notargiacomo et al. 2022). This limitation is apparent when studying flow in educational games, where frequent interruptions can disrupt the experience and limited time frames reduce the opportunity for meaningful sampling (Bressler & Bodzin 2013). Other strategies include running controlled experiments and surveys to evaluate flow-related experiences (Notargiacomo et al. 2022). More recently, researchers have also turned to qualitative analysis, inviting learners to describe their experiences in their own words (Ainley, Enger & Kennedy 2008). This can certainly yield vivid and detailed accounts of what immersion feels like, although the results are often difficult to replicate across different user profiles, given their deeply personal nature (ibid.).

As scholarly literature highlights, each of these evaluation methods inevitably comes with trade-offs, whether it be concerns over ecological validity, or the inherent variability of self-reported data (Moneta 2012). As a result, capturing flow empirically remains a complex challenge (ibid.). As such, any application of Csikszentmihalyi's theory, particularly in the design or assessment of learning games, must acknowledge these constraints and approach the issue of measurement with thoughtful consideration (Notargiacomo et al. 2022; Fang, Zhang & Chan 2013).

Since this study focuses on the potential of digital games to support L2 acquisition, it is worth emphasising why particular attention has been devoted to Flow Theory, which clarifies how game-based experiences can foster optimal conditions for learning. When players are fully immersed, meaning they are mentally focused, emotionally invested, and appropriately challenged, they are more likely to acquire linguistic contents effectively, given that cognitive interference is reduced (Chang et al. 2018). Moreover, flow supports implicit learning processes, which are especially valuable in SLA, where grammar and vocabulary are often absorbed through contextualised input rather than explicit instruction (Ellis 2015; Williams 2009). Thus, in the design of digital games for L2 learning, flow should not be regarded as a secondary or merely aesthetic feature of gameplay but as a core component that may directly contribute to their effectiveness.

1.7. Towards a Serious Game for Older Adult Language Learners: Design Considerations and Theoretical Insights

This chapter has explored the theoretical foundations framing game-informed approaches to education. It began by placing the concepts of *play* and *game* in a comparative perspective, shedding light on their nuances and points of intersection with the realm of learning. This trajectory provided the basis for introducing

gamification, Digital Game-Based Learning (DGBL), and Serious Games (SGs) as distinct yet interconnected strategies that reflect how gaming culture is increasingly shaping educational practices (Deterding et al. 2011; Pavlidis & Markantonatou 2022).

The discussion then moved to delve into the roles of extrinsic and intrinsic motivation, alongside the mechanisms of engagement, emphasising their relevance in the design of effective instructional materials. In this context, special emphasis has been paid to Flow Theory, drawing a link with Cognitive Load Theory (CLT) in order to better elucidate how digital games, when thoughtfully implemented, foster conditions that can optimise attention, support immersion, and manage cognitive processing, all aspects which contribute to effective learning (see Scott, Casey & Kane 2022; Whitton 2011a; Ryan & Deci 2000a; Csikszentmihalyi 1990; Sweller 1988; Topal & Karaka 2022; Notargiacomo et al. 2022).

Throughout the chapter, the potential of digital games in the field of L2 learning has been underlined, with occasional reference to older adults, particularly in relation to their distinctive attitudes, learning preferences and needs (see Castañeda 2016; Peterson et al. 2022; Knowles, Holton, & Swanson 2005; Whitton 2007; Whitton 2011b; Wlodkowski 2011). Although a more detailed analysis of Second Language Acquisition (SLA) in later life will be carried out in the next chapter, it is useful at this stage to outline a few key points that serve as background for a set of game design considerations introduced below.

It is crucial to recognise that adulthood encompasses a wide spectrum of life stages and experiences. According to the World Health Organization (WHO)[22] and the United Nations (UN)[23], individuals are generally classified as "older adults" from the age of 60 onward. Moreover, subgroups within this population include the young-old

[22] World Health Organization (2015). *World Report on Aging and Health*: <https://iris.who.int/bitstream/handle/10665/186463/9789240694811_eng.pdf>.
[23] United Nations, Department of Economic and Social Affairs, Population Division (2019). *World Population Ageing 2019*: <https://digitallibrary.un.org/record/3846855?v=pdf>.

(60-74 years of age), the old-old (75-95 years of age), and the oldest-old (95+), each displaying differing cognitive and motivational characteristics, which may influence how they approach and engage with language learning (see Cardona 2024; Milizia & Sportelli 2024). Moreover, personal history, cultural background, and prior knowledge significantly influence how new linguistic input is processed and retained, a perspective that aligns with the principles of andragogy, which stress the value of past experiences as a meaningful basis for learning a new language in adulthood (Knowles 1970). The scenario is further complicated by the pervasive influence of age-related stereotypes that often portray later life as a period of cognitive decline, undermining older adults' perceived ability to learn effectively (Carstensen & Hartel 2006; Reissmann et al. 2021). These clichés also extend to assumptions about their technological ineptitude (Ivan & Cutler 2021), which may discourage them from using digital tools and platforms, raising potential barriers to the adoption of SGs and other technology-enhanced learning strategies.

Building on these points, Chapter 2 will more directly address the specificities of Foreign Language Learning (FLL) in later adulthood, drawing on theoretical contributions from the domains of andragogy, geragogy, and glottogeragogy.

In conclusion, the insights discussed in this chapter provide fertile ground for some useful considerations that could guide the development of a SG for English language learning targeting older adult learners, with particular attention to their characteristics and needs.

1. As discussed throughout the chapter, an effective serious game for L2 learning should ensure that players pursue clear goals and receive both immediate and delayed feedback (Csikszentmihalyi 1990; Whitton 2011a). Indeed, well-defined objectives help maintain focus and reduce uncertainty. Immediate feedback, in turn, reinforces correct responses, supports error correction, and helps build confidence, while delayed feedback, delivered at the end of a task

or activity, allows learners to review their overall performance, reflect on their choices, and better consolidate newly acquired language skills. For older adults, who often benefit from structured guidance and self-regulated learning (Knowles, Holton & Swanson 2005; Wlodkowski 2011), this combination can help maintain engagement and support steady, confident progression.

2. A well-designed SG should maintain an appropriate level of challenge (Csikszentmihalyi 1990; Scott, Casey & Kane 2022), taking into account the learner's language skills. As pointed out in relation to Flow Theory (Csikszentmihalyi 1990) and CLT (Sweller 1988; Sweller 1994), this balance is critical for sustaining focus and avoiding both overload and boredom. Given that processing speed and working memory can differ widely among older adults (Chaffin & Harlow 2005), it is especially important that tasks remain stimulating yet manageable. Thus, design features such as adjustable difficulty levels or a gradually paced gameplay progression can help maintain motivation while accommodating individual learning needs (Hamari et al. 2016).

3. A SG for L2 learning should prioritise task-based activities that simulate real-life situations. Grounded in the principles of Situated Learning (SL) and Task-Based Language Teaching (TBLT), this approach allows players to practise the target language in meaningful and authentic contexts (Long 1985; Ellis 2003; Nunan 2004; Seedhouse 2017). Hence, tasks should be designed to align with the interests and practical needs of older adults (Knowles 1970; Castañeda 2017), as this can enhance engagement, support long-term retention, and strengthen the sense of purpose behind the learning experience.

4. A structured narrative can meaningfully support SLA by embedding linguistic input within emotionally resonant storylines (Naul & Liu 2019). Rather than

functioning merely as a background element, a cohesive plot motivates players to interact with the language not only to complete activities but also to follow the development of the story. Furthermore, motivation theory and game studies stress that narratives built around relatable life themes, such as travelling or cooking, can be particularly effective for older adults, helping them form a deeper connection with the learning material (Seedhouse 2017).

5. Integrating opportunities for social interaction into a SG for L2 learning can enhance both communicative practice and engagement, particularly through collaborative strategies (Dindar, Ren & Järvenoja 2021). Among older learners, this aspect may also help counteract isolation, especially in contexts where social contact is limited (Khosravi, Rezvani & Wiewiora 2016). Therefore, building on communicative language teaching (see Spada 2007) and collaborative learning (see Janssen & Kirschner 2020), a well-designed game should include dialogic or cooperative tasks (e.g., joint problem-solving, turn-taking, or shared storytelling). Social features do not need to be synchronous or competitive, as even simple peer feedback mechanisms, asynchronous messaging, or structured pair tasks can promote participation and purposeful interaction without adding undue cognitive strain (Manera et al. 2017).

6. A SG for L2 learning should facilitate the processing and consolidation of linguistic content through the use of multimodal resources (e.g., visual, auditory, and kinaesthetic), while also meeting standards of accessibility and usability (Cardoso Garone, Nesteriuk & Belluzzo de Campos 2020). This approach draws on Dual Coding Theory (DCT) and Multimedia Learning Theory (MLT), which both emphasise that learning is enhanced when information is conveyed through multiple sensory channels (Clark & Paivio 1991; Mayer 2005). For older adults, however, multimodal design must

account for age-related sensory changes, such as reduced hearing and/or visual acuity (Lee et al. 2021). Accordingly, the game should incorporate clear audio, high-contrast and legible text, as well as an intuitive interface, avoiding excessive visual clutter or overly rapid speech delivery that may hinder comprehension. In addition, combining different types of input, such as pairing a word with an image, an audio cue, or a contextualised example, can help strengthen associations that enhance understanding and long-term memorization.

The points discussed above not only reflect the core educational affordances of digital games but also aim to address, at least in part, the cognitive and affective characteristics of older adult learners. However, the term *older adults*, as previously noted, refers to a highly heterogeneous population, so that and it would be misleading to draw generalisations or to conflate the experiences of the young-old with those of the old-old or oldest-old. For this reason, the design considerations outlined here should not be taken as exhaustive responses to the needs of these different subgroups altogether. Rather, at this stage, they represent an attempt to offer only some general insights for the SG prototype that will be investigated in Chapter 3.

CHAPTER 2

LEARNING A FOREIGN LANGUAGE IN THE THIRD AGE

2.1. Aging and Learning in the Digital Era: Rethinking Foreign Language Education for Older Adults

The latest demographic forecasts released by the World Health Organization (WHO) indicate that the global population aged 60 and above is projected to grow from 1 billion in 2020 to 1.4 billion by 2030, and to 2.1 billion by 2050[1]. Additionally, the number of people aged 80 or older is set to triple, reaching 426 million over the same period[2].

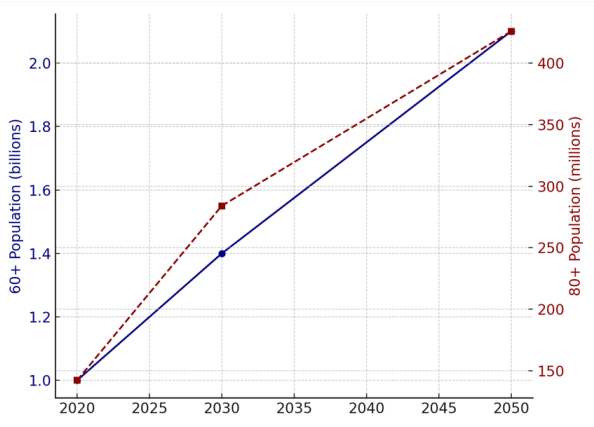


Figure 1. Projected growth of the global population aged 60+ and 80+[3]

[1] World Health Organization (WHO). Official Website. Consulted on October 10, 2025: <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>.
[2] World Health Organization (WHO). Official Website. Consulted on October 10, 2025: <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>.
[3] Graph created by the author using WHO demographic data as of 2020: <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>.

In Europe, this trend has led to a reconsideration of traditional retirement models. Although 65 has long marked the end of professional activity, many countries are now increasing the age threshold – or planning to do so – in response to rising life expectancy and the challenges posed by aging populations, including the need to ensure the sustainability of pension systems[4].

Within the Italian context, the increase in average lifespan over the past decades is particularly noteworthy. In 1971 it stood at 69 years for men and 74.9 for women, whereas in 1981, it had risen to 71.1 for men and 73.8 for women, respectively[5]. Moreover, as of 2024, ISTAT data indicate that life expectancy eventually reached 81.4 years for men and 85.5 for women[6].

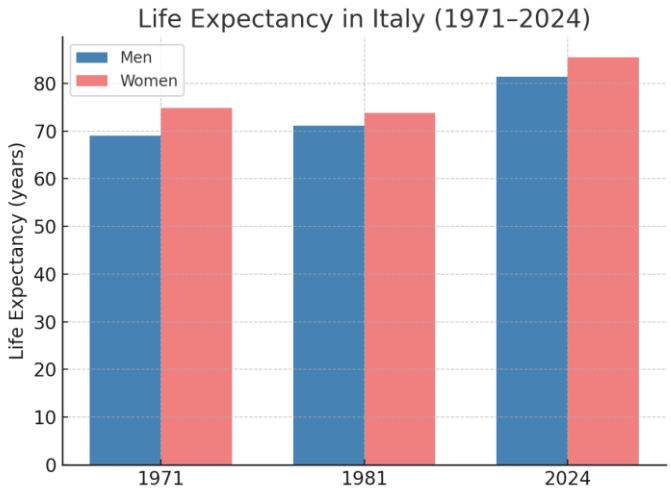


Figure 2. Life expectancy in Italy for men and women (1971–2024)[7]

[4]Eurofond. Official Website. Consulted on October 10, 2025: <https://www.eurofound.europa.eu/en/topic/retirement>.
[5]ISTAT (2011). *Italia in cifre*. Consulted on October 10, 2025: <https://www.istat.it/it/files/2011/03/Italia-in-cifre.pdf.>.
[6] ISTAT (2025). *Rapporto annuale 2025*. Consulted on October 10, 2025: <https://www.istat.it/wp-content/uploads/2025/05/Rapporto-Annuale-2025-integrale.pdf>.
[7]Bar chart created by the author based on ISTAT data 1971-2024. See: <https://www.istat.it/it/files/2011/03/Italia-in-cifre.pdf.>, and <https://www.istat.it/wp-content/uploads/2025/05/Rapporto-Annuale-2025-integrale.pdf>.

Consequently, the steady growth of older adult population has brought this demographic increasingly to the forefront of public policy, social debate, and scientific research (Luise 2024). In the field of cognitive psychology, second language (L2) learning has emerged as a promising means for supporting healthy and active aging, with benefits on multiple levels, such as enhanced neural plasticity, cognitive reserve, social engagement, and a renewed sense of purpose in later life (Antoniou, Gunasekera & Wong 2013).

As the phenomenon of increasing human longevity has contributed to a redefinition of the life course, contemporary sociological, neuropsychological, and educational research approach older adulthood not as a monolithic phase, but as a stage of life marked by distinct age categories (Cardona 2024), as outlined below:

- Young-old (64-74 years of age)
- Old (75-85 years of age)
- Oldest-old (86-99 years of age)
- Centenarians

The young-old period is commonly identified as the beginning of the third age, since it follows childhood (the first age) and the years of work and parenting (the second age) (Laslett 2008). This stage is generally viewed in positive terms and often described as the "golden years" of adulthood: a dynamic time characterised by ongoing social, psychological, and cognitive development, although it may coincide, in some cases, with the emergence of early signs of decline (Lally & Valentine-French 2017).

Nonetheless, the concept of the third age is complex and cannot be fully captured only through chronological criteria. Other dimensions are just as relevant. There is, for instance, a biological age (Cardona 2024), which reflects the physical condition and

longevity of the body, and a psychological age (ibid.), referring to a person's cognitive and emotional state. Moreover, a social age (ibid.) comes into play, shaped by the roles and relationships people hold within their communities, while a cultural age (ibid.) mirrors the expectations and meanings that different societies attach to the idea of growing older. Taken together, these factors have contributed to a broader redefinition of the length and nature of human development.

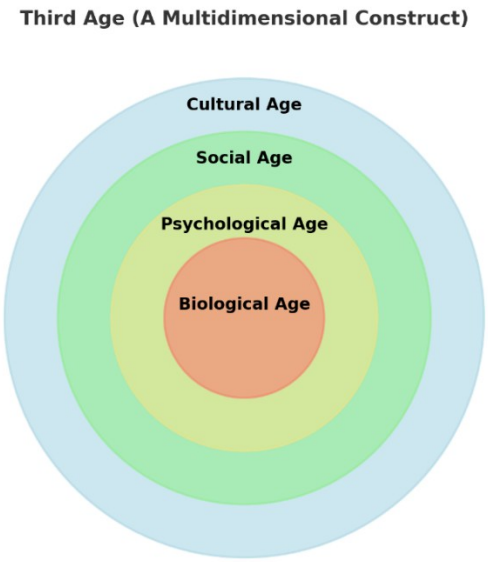


Figure 3. The Third Age as a multidimensional construct[8]

The psychological dimension of later life is of particular interest, as it pertains to how individuals perceive and interpret their own age identity. In Italy a CENSIS report (CENSIS 2006) reveals that 75.4% of people over the age of 60 do not consider themselves old. Unsurprisingly, this perception is most widespread among those aged 60-64, with 90.5% rejecting the "elderly" label (ibid.). However, it is notable that this sentiment remains strong even among older cohorts: 68.7% of those aged 75-79 and

[8] Author's elaboration based on Cardona (2024).

47.7% of those aged 80 and above also refrain from identifying with that term (ibid.). These findings highlight a growing inconsistency between chronological indicators and perceived self-positioning in later life, reinforcing the importance of subjective experience in the social and cultural construction of aging.

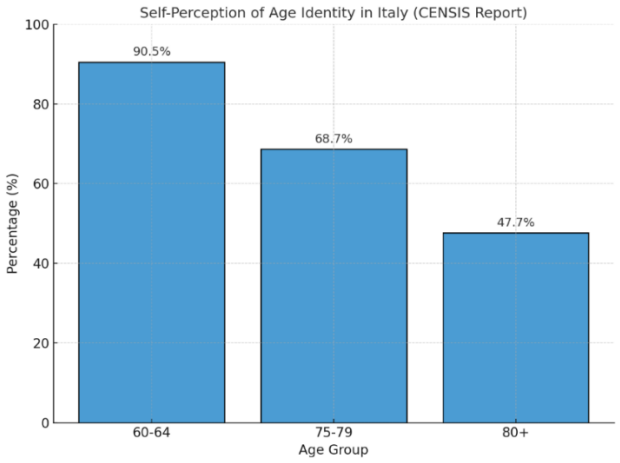


Figure 4. Self-Perception of Age Identity in Italy among adults aged 60 and above[9]

A growing sensitivity towards the senior years has given rise to an expanding body of scholarly literature, which investigates the aging process from a multidisciplinary perspective, drawing on neuropsychology, social, and cultural studies (see Park & Reuter-Lorenz 2009; Twigg & Martin 2015; Zittoun 2012). In this regard, the concepts of active and successful aging occupy a central position (Katz 2013; Rowe & Kahn 2015), emphasizing how older adults can maintain a good quality of life and perform meaningful roles in society. In 2002, the WHO introduced the notion of active aging as a strategy aimed at improving life conditions for people aged 65 and over, by enhancing opportunities for health, participation, and security (World Health Organization 2002). Crucially, this approach broadens the idea of well-being beyond physical health, promoting autonomy, independence, lifelong learning, and

[9] Bar chart created by the author based on data from CENSIS (2006).

attention to the living environments of older individuals. Rather than portraying later life in terms of decline or dependency, a more emancipated view highlights the importance of acknowledging the agency of older adults in shaping their own experiences, valuably contributing to society (Dogra et al. 2022).



Figure 5. Active Aging Policy Framework[10]

In line with this perspective, L2 learning has emerged as a promising way to support social, psychological, and cognitive well-being in older learners. Far from being a mere leisure activity, acquiring a new language provides a range of benefits for this demographic, helping to preserve or enhance cognitive functions, which is an essential asset in the context of longer life expectancy (Antoniou, Gunasekera & Wong 2013). Yet, a persistent barrier remains, namely, the widespread assumption that language learning is no longer feasible after a certain stage of life (Ramírez Gómez 2016a). This belief, deeply rooted in both public perception and early scientific literature, has been largely influenced by the Critical Period Hypothesis (CPH), one of

[10] Image adapted from Li (2024).

the most debated and enduring theories in the field of language acquisition (see Lenneberg 1967; Birdsong 1999; Vanhove 2013).

Since its inception in the late 1960s, Lenneberg's (1967) CPH has been at the centre of intense scholarly inquiry, significantly influencing both theoretical models and educational practices in language education. This theory builds on the work of Penfield and Roberts (1959) who linked the reduced efficiency of language learning mechanisms to a gradual decline of neural plasticity. Therefore, CPH posits that language acquisition is biologically constrained to a limited time frame, which typically ends with the completion of cerebral lateralization, around the onset of puberty, by approximately age twelve (Lenneberg 1967; Andrew 2012).

Over time, research inspired by this hypothesis has attempted to define one or more critical periods for Second Language Acquisition (SLA) as well. However, these efforts have not yielded a definitive or universally accepted scientific consensus (see Birdsong 1999; Vanhove 2013; Johnson & Newport 1989). This is due, in part, to the fact that early scholars have focused almost exclusively on the age range initially identified by Lenneberg, overlooking other groups that were neither tested nor considered (Cavallini & De Iaco 2024). Therefore, the CPH has faced substantial criticism, although in some cases it has been reconsidered in more flexible terms, suggesting that the critical window may affect only certain areas of L2 development, such pronunciation and articulation, rather than applying to language proficiency as a whole (Singleton & Lengyel 1995; Hakuta, Bialystok & Wiley 2003).

For decades the CPH has shaped assumptions about who can effectively acquire a language, reinforcing the idea that younger learners are inherently better suited to this task (Birdsong 2006). As a result, language courses and pedagogical models have traditionally prioritised the needs and cognitive profiles of children and adolescents (Pfenninger & Singleton 2017). Only recently, however, has research begun to challenge earlier views, recognising that age does not affect language acquisition as rigidly as it was once believed (Keely 2016; Cardona & Luise 2018). This has paved

the way for the development of teaching methods tailored to learners of all stages of life.

Obviously, cognitive approaches to language learning differ significantly across age groups. Whereas children typically excel in spontaneous and immersive language learning contexts, which encourage implicit and automatic acquisition mechanisms, older adult learners tend to benefit more from structured, formal settings, where they can draw on explicit, conscious learning processes based on declarative knowledge (DeKeyser 2005).

Recent studies on the relationship between age and language learning have shifted away from deterministic neurological perspectives, conversely embracing the notion of lifelong educability supported by evidence that the brain retains a degree of plasticity across the lifespan. As Ramírez Gómez (2016a) observes:

> "The brain is not a fixed and predefined network. Rather, it is under constant transformation; neurons regenerate across the lifespan of an individual, and the brain system reorganizes itself continuously based on the individual's habits and actions" (Ibid.: 8).

In fact, neurological factors account for SLA only in part. Learning potential in later life is also shaped by a combination of external and internal influences (Singleton 2007), including endogenous and environmental conditions, as well as psychological, affective, emotional, and motivational variables (Cardona & Luise 2018).

Contrary to persistent stereotypes regarding older adults' alleged difficulties in acquiring a new language, evidence highlights the favourable effects of this form of cognitive stimulation, which supports the preservation of brain functions in later life, a stage often marked by mental deterioration (Antoniou, Gunasekera & Wong 2013; Bak et al. 2014). Studies suggest that intellectually stimulating activities, such as L2 learning, can significantly delay the onset of age-related conditions such as dementia,

depression, and Alzheimer's disease (Bialystok, Craik & Freedman 2007; Woumans et al. 2015). SLA is indeed particularly effective, as it activates multiple brain regions and cognitive functions (Bubbico et al. 2019).

Notably, while aging is often associated with memory loss, older adults tend to develop compensatory strategies that can positively support the learning process. These include well-established study routines, an extensive vocabulary, and a rich reservoir of life experience (Ramírez Gómez 2016a). Language learning also promotes emotional and social well-being, offering opportunities for peer-interaction, countering feelings of loneliness, and encouraging active participation in community life (Pikhart & Klimova 2020). Moreover, older learners frequently exhibit strong intrinsic motivation, as their goals are driven by personal growth rather than the pursuit of formal qualifications (Knowles 1970; Cardona & Luise 2018).

As previously stressed, interest in L2 learning involving older adults has grown in recent years. Nevertheless, empirical research on this topic remains relatively scarce (Ramírez Gómez 2016a). The lack of a robust evidence-based body of studies, built on rigorous methods, and free from age-related bias, points to the need for new theoretical models focusing on the specificities of this population (Singleton & Pfenninger 2019). This implies taking into account a complex interplay of social, cognitive, emotional, physiological, and psychological aspects (Cardona 2024). In this view, the emerging field of foreign language geragogy (Ramírez Gómez 2016a) advocates for treating older learners as a separate age group within language education. Drawing on andragogical principles, this field aims to encourage a more nuanced reflection of age-related factors that may hinder the learning process, particularly those associated with memory decline, sensory changes, reduced motor control, and slower cognitive processing (ibid.). Crucially, a geragogical perspective emphasises the importance of older learners' compensatory strategies, shifting the focus towards their strengths rather than their limitations (Cardona & Luise 2018).

Alongside traditional educational approaches, the potential of Serious Games (SGs) as tools to support L2 learning in later life has recently attracted scholarly attention (Gutiérrez-Pérez et al. 2023). Digital technologies have become deeply embedded in contemporary culture and are now widely accessible across age groups due to the widespread use of smartphones, tablets, and handheld consoles (Ishaq, Rosdi & Zin 2022). Their growing popularity has encouraged scholars to explore their applications in a variety of domains, including language education (see Peterson 2009; Peterson 2013).

However, it has been argued that the majority of studies to date have investigated the impact of digital games for L2 learning on younger populations, devoting little attention to their relevance in later life (Gutiérrez-Pérez et al. 2023). This gap has been partly linked to persistent stereotypes about older individuals' technological ineptitude (Ivan & Cutler 2021), along with the enduring assumption that SLA is unfeasible beyond a certain age. As Gutiérrez-Pérez et al. (2023) note, such misconceptions may reinforce feelings of inadequacy, and discourage older adults from using technology, perpetuating the digital divide. As a result, these perceptions not only underestimate the adaptability of this category of learners to innovative educational approaches but would also deny them access to the cognitive, emotional, and social gains that digital games can offer.

Yet, growing evidence indicates that gaming technologies can positively contribute to older adults' quality of life. A particularly relevant case is that of exergames, which are used to promote health through motor coordination and physical activity (Swinnen et al. 2021; Legouverneur et al. 2011; Anguera & Gazzaley 2015; Spence & Feng 2010). The impact of SGs also extends into the cognitive sphere, including the areas of processing speed, spatial awareness, and logical reasoning (Muscio et al. 2015; Anguera et al. 2013; Nouchi et al. 2012). Moreover, these tools can support emotional well-being and self-esteem by fostering social interaction,

helping to alleviate a sense of isolation often experienced in later life (Anguera, Gunning & Areán 2017).

In the context of positive technology, SGs emerge not merely as a form of entertainment, but as meaningful instruments for promoting active engagement in later life, consistent with the goals of gerontological research (Gutiérrez-Pérez et al. 2023). Their application within the field of SLA is particularly promising, as they can effectively support cognitive stimulation and sustained motivation among older adults (ibid.). To fully appreciate these positive outcomes, further research is needed on their educational impact and on how these tools can be thoughtfully integrated into lifelong learning strategies.

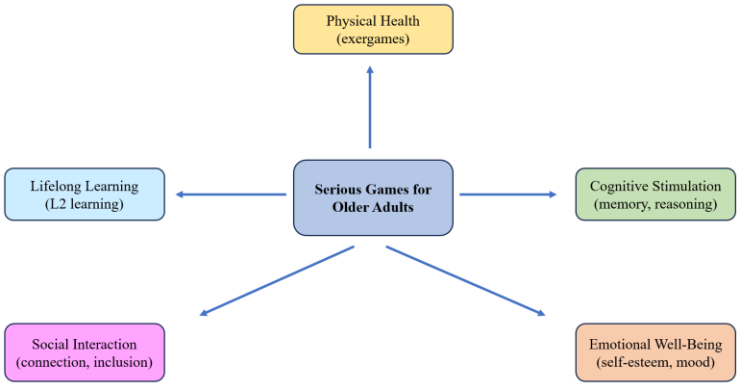


Figure 6. Applications and benefits of Serious Games for older adults

2.2. The Critical Period Hypothesis and the Age Factor in Second Language Acquisition

Debates on the role of age in Second Language Acquisition (SLA) consistently turn to the Critical Period Hypothesis (CPH), widely regarded as the most extensively examined theory addressing the existence of biological constraints on linguistic

outcomes (Andrew 2012). Originally proposed to account for limitations in first language (L1) development, the CPH has since been extended to the domain of foreign languages, prompting key questions about the extent to which age-related factors influence the ability to learn another language (ibid.). Among the issues raised are whether humans possess an innate time-bound aptitude for language learning, whether this skill wanes or disappears after a certain age, and how such limits impact the design and effectiveness of instructional approaches in SLA (see Long 1990; Singleton & Ryan 2004).

In his seminal work *Biological Foundations of Language* [11], Lenneberg (1967) introduces the idea of a specific time window for language acquisition, arguing that the ability to learn language with ease is supported by a neurological mechanism that operates most effectively in early childhood. This period is thought to end around puberty, as the brain undergoes structural changes, such as hemispheric lateralization[12] and a decline in neural plasticity (ibid.). After this stage, language learning is believed to become considerably difficult and less efficient (ibid.).

Arguments in favour of the CPH often draw on the widely observed pattern that children, when exposed to their first language under typical conditions, achieve full native proficiency reaching similar milestones at analogous developmental stages (Andrew 2012). However, considering that language competence involves a diverse set of skills, some scholars have proposed the existence of multiple critical periods (ibid.). In this perspective, certain aspects of language, such as pronunciation or articulation, may be more time-sensitive than others (Flege et al. 1995; Moyer 1999). Consequently, while a strong version of the CPH holds that language acquisition is no longer possible after puberty, more moderate interpretations suggest that learning

[11] White & Genesee (1996) contend that the CPH was originally introduced by Penfield and Roberts (1959) and later refined by Lenneberg.

[12] Lateralization is the gradual process through which the brain's two hemispheres become increasingly specialised for specific functions, such as language (Andrew 2012).

remains feasible after this threshold, though not without drawbacks. In particular, the attainment of native-like fluency is generally considered unlikely (Long 1990).

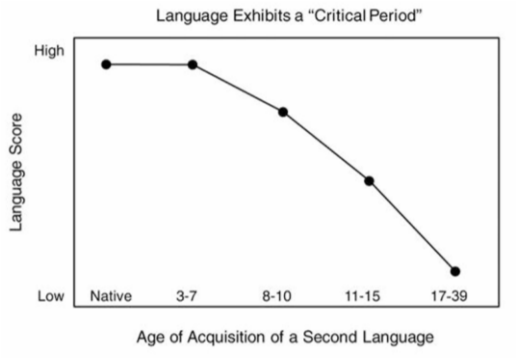


Figure 7. The Relationship between age of acquisition of a second language and language skill[13]

Proponents of the strong version of the CPH (see Johnson & Newport 1989; Long 1990; Oyama 1976; Patkowski 1980) cite evidence that younger learners tend to generally outperform older ones in SLA, as they still have access to their innate language-learning mechanism achieved in early life, which is presumed to become less available or entirely inaccessible with age. Nevertheless, this view has been questioned by findings documenting cases of successful late learners, who have achieved high levels of proficiency, particularly in the areas of pronunciation and morphosyntax (Abu-Rabia & Kehat 2004; Bongaerts 1999; Ioup et al. 1994). These exceptions have contributed to growing scepticism regarding the deterministic nature of the strong version. As a result, a weaker interpretation of the CPH has gained increasing recognition among researchers, replacing the concept of a fixed *critical period* with that of a *sensitive period*, referred to as a flexible phase during which language learning is most effective, yet not strictly confined to that timeframe (Andrew 2012). Rather than ending abruptly at puberty, the ability to acquire an L2 would gradually decline with age.

[13] This graph has been adapted from Johnson and Newport (1989: 79).

Further insights into age-related effects in SLA come from studies that differentiate between *rate of acquisition* and *ultimate attainment* (Krashen, Long & Scarcella 1979; Birdsong 2006; Muñoz 2006). The former refers to how quickly learners develop linguistic skills during the initial stages of L2 learning, while the latter has to do with the highest level of proficiency eventually reached (Andrew 2012). Investigations carried out in the 1970s and 1980s showed that older learners tended to make faster progress at the outset, particularly at the level of morphology, syntax, and pronunciation (ibid.). However, this advantage was found to be only temporary, as their younger counterparts achieved better results in the long run (ibid.). In contrast, research on ultimate attainment has played a more decisive role in evaluating the existence of maturational constraints, consistently highlighting that the later the Age of Onset (AO), the less likely learners are to reach high levels of fluency (Oyama 1976; Patkowski 1980; Johnson & Newport 1989).

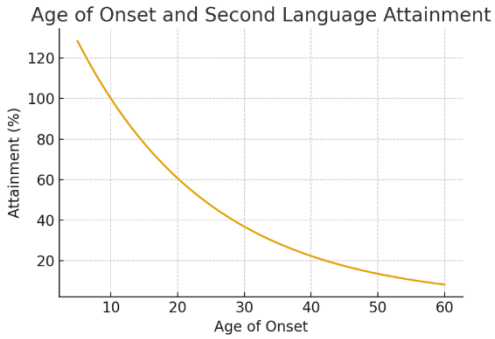


Figure 8. Relationship between Age of Onset and Second Language Attainment[14]

It has been previously noted that pronunciation is regarded as a particularly age-sensitive domain in SLA, since it largely relies on neuromuscular coordination and articulatory habits formed in early life. Nonetheless, findings in this area remain

[14] Graphic representation on the relationship between Age of Onset and Second Language Attainment.

mixed. Several studies report that most late learners retain a noticeable foreign accent (see Flege et al. 1995; Moyer 1999), whereas others have reported interesting cases in which they achieved near-native pronunciation despite beginning L2 acquisition at an older age (e.g., Bongaerts 1999; García Lecumberri & Gallardo 2003). Similarly, exceptional performance in morphosyntax has also been observed among older adults (e.g., Birdsong 1992; Ioup et al. 1994), further challenging the deterministic stance of the strong version of the CPH. Collectively, these results have reinforced the view that age is a variable worth taking into account in L2 learning, although it does not exclusively affect linguistic outcomes, lending additional weight to the weak version of the hypothesis.

Support for CPH (Pro)	Challenges to CPH (Contra)
Children typically reach native-like proficiency at comparable developmental stages (Andrew 2012).	Documented cases of successful late learners achieving high proficiency, particularly in pronunciation and morphosyntax (Abu-Rabia & Kehat 2004; Bongaerts 1999; Ioup et al. 1994).
Strong interpretation: Neurological mechanisms for language acquisition decline after puberty (Lenneberg 1967; Johnson & Newport 1989; Long 1990; Oyama 1976; Patkowski 1980).	Weaker interpretation: This view posits the existence of a sensitive period rather than a strict cut-off; learning remains possible in later life (Abu-Rabia & Kehat 2004; Bongaerts 1999; Ioup et al. 1994).
Native-like attainment is no longer possible after the critical window (Lenneberg 1967; Johnson & Newport 1989; Long 1990; Oyama 1976; Patkowski 1980).	Pronunciation is often age-sensitive, but some older learners have proved to achieve near-native accents (Flege et al. 1995; Moyer 1999; Bongaerts 1999; García Lecumberri & Gallardo 2003)
Older learners may show initial rapid progress, but younger learners tend to surpass them in the long run (Johnson & Newport 1989; Long 1990; Oyama 1976; Patkowski 1980).	Age interacts with other factors, such as motivation, learning strategies, prior experience, sociocultural aspects (Vygotsky 1981; Andrew 2012).

Summary Table 1. Arguments supporting and challenging the CPH

Overall, the cited literature review indicates that a rigid acceptance of the CPH is increasingly difficult to uphold. The idea of a biologically fixed window for successful acquisition appears overly reductive when weighed against the varied

outcomes reported among learners, particularly those who started studying an L2 in adulthood. One of the main shortcomings of CPH-based research lies in its treatment of age as a strictly chronological variable, detached from the social contexts in which SLA occurs. This perspective fails to acknowledge that age is not simply a biological condition but is also shaped by social constructs along with issues concerning gender, class, ethnicity, and life experience.

In response to these gaps, a line of research (e.g., Vygotsky 1981; Kramsch 2000; Lantolf & Pavlenko 1995; Lantolf & Thorne 2006; Andrew 2012) has shifted towards sociocultural approaches to L2 learning, which challenge the idea of language as a system acquired only through internal cognitive mechanisms, conversely emphasising its fundamentally social nature. Since the early 1980s, an increasing number of studies adopting an ethnographic perspective have investigated how language emerges and develops through interaction in everyday contexts (see Duff 1995; Watson-Gegeo 2004). In this regard, language learners are conceived as active participants who build meaning through engagement in communicative practices shaped by their social environments. As Lantolf and Pavlenko (1995: 116) put it, learners are "moved out of the Chomskian world of the idealized speaker-hearer", since sociocultural theory repositions them within everyday contexts, such as classrooms, communities, and workplaces. Language is no longer seen as an isolated mental process but as a form of participation in the social world, which requires negotiation, collaboration, and shared experience.

Particularly relevant to this discussion is Vygotsky's (1981) point of view, according to which the human mind is socially constituted and that complex cognitive abilities – such as reasoning, memory, and problem-solving – are not innate, as they develop through interaction with other speakers. Here, language plays a crucial role, serving not only as a means of communication, but also as a powerful tool for thinking (ibid.). In essence, we learn to think by talking, and through social exchanges we internalize what eventually becomes our personal reasoning.

In this context, Activity Theory, developed by Leontiev and Luria, builds on Vygotsky's postulate that learning is tied to purposeful, goal-directed activities situated in social contexts (Lantolf & Pavlenko 2001). Foreign Language (FL) acquisition is not just about memorizing grammar rules or vocabulary in isolation. It rather involves meaningful activities with others, so that external social knowledge is converted into internal cognitive knowledge (Vygotsky 1981). Language learning thus requires "scaffolding" (Andrew 2012: 20), namely, guidance typically provided by more experienced interlocutors. Yet, as Lantolf and Pavlenko (1995) point out, SLA can also effectively take place among peers. Even when no expert is present, learners can co-construct meaning through collaboration, each contributing to and benefiting from the interaction (ibid.). This is the rationale behind peer-group work in FL classrooms, where mutual support fosters the learning process.

Taken together, these considerations suggest that L2 learning cannot be reduced to fixed age thresholds which would *a priori* exclude older adults, who may, in fact, derive substantial benefits from this practice. Recent research in the fields of cognitive psychology, applied linguistics, sociolinguistics, andragogy, and foreign language geragogy highlights that the ability to acquire a new language persists across the lifespan, and is shaped by a wide range of factors that transcend the narrow view of biological determinism, encompassing psychological, social, and cultural dimensions (Lantolf & Thorne 2006; Andrew 2012; Cardona 2024; Cardona & Luise 2018). Beyond linguistic competence, in the third age SLA offers multiple advantages, preserving cognitive reserve, fostering social bonds, and reinforcing a strong sense of agency (Craik, Bialystok & Freedman 2010; Stern 2002; Stern 2009). Aging is no longer regarded as an obstacle to this endeavour, as older adults can draw on specific strengths and resources (i.e., accumulated life experience, intrinsic motivation, emotional maturity, and well-established learning strategies) that meaningfully support their engagement with the target language (see Knowles, Holton & Swanson 2005).

2.3. Educational Frameworks for Later-Life Language Learning: Pedagogy, Andragogy, and Geragogy

Acknowledging that Second Language Acquisition (SLA) is not only possible but also deeply beneficial in later life raises fundamental questions about how teaching approaches should be adapted to meet the specific needs of older adults. As previously discussed, interest in Foreign Language Learning (FLL) among senior students has grown, encouraging a broader re-evaluation of age-related assumptions regarding their ability to acquire a new language (Antoniou, Gunasekera & Wong 2013; Bak et al. 2014). In this context, greater attention should be devoted to educational theories that guide language instruction for this demographic. The next section will therefore deal with andragogy and geragogy, with a particular focus on how the latter can be applied to the domain of L2 learning. The attempt is to outline their core principles and emphasise how these approaches go beyond traditional pedagogy to more effectively support FLL in later adulthood.

2.3.1. From Pedagogy to Andragogy

Children and adults approach the study of a second language (L2) in different ways, making it essential to adopt teaching methods that align with their respective needs, cognitive profiles, preferences, and goals. Language instruction cannot rely on a one-size-fits-all model, requiring solutions that are sensitive to the learner's developmental stage and experience. In this view, pedagogy and andragogy become particularly relevant. The former derives from the Greek *paidagogos*, meaning "to lead children", and refers to the methods and strategies traditionally used in teaching younger learners (Deveci 2007). The latter, on the other hand, comes from the Greek *andragogos*, or "to lead men" (adult males), and designates the learning principles and practices specifically developed for adult students (ibid.).

The term andragogy dates back to the early 19th century, when Alexander Kapp used it to interpret Plato's philosophy of education (Davenport & Davenport 1985). However, it was not until the mid-20th century that it began to gain traction within European scholarly discourse. During the 1950s and 1960s, andragogy was reintroduced to highlight the specific features of adult learning, setting it apart from pedagogical models traditionally applied to children and adolescents (Cardona 2024). This renewed interest gave rise to an expanding body of research focused on lifelong education and vocational training (Formosa 2012; Findsen & Formosa 2012; Jarvis 2004; Ramscar et al. 2014; Escuder-Mollon et al. 2014; Slattery 2024).

The concept of andragogy eventually gained broader recognition in the United States largely due to the work of Malcolm Knowles (Cardona 2024). In his essay *Andragogy, Not Pedagogy* (Knowles 1968), he explicitly contrasted the two paradigms, proposing an alternative framework better suited to the characteristics of adult learners. This early contribution was followed by two influential volumes, *The Modern Practice of Adult Education: Andragogy versus Pedagogy* (Knowles 1970) and *The Adult Learner: A Neglected Species* (1973), which played a pivotal role in consolidating andragogy as a foundational theory within the field.

According to Knowles, the main difference between pedagogical and andragogical approaches lies in the learner's degree of agency. Whereas children are typically expected to learn as part of compulsory educational programmes, adults undertake study as a result of a conscious and voluntary decision. This idea is echoed in a quote by Herbert and Anderson (2000):

> "The capacity to learn is a gift, the ability to learn is a skill, and the willingness to learn is a choice" (Ibid.: 532).

Thus, a key tenet of andragogy is that adult learning is self-directed and intentional (Knowles 1975; Merriam, Caffarella & Baumgartner 2020). In contrast, pedagogy

typically relies on teacher-led instruction designed for dependent learners (Knowles 1968; Knowles 1970; Knowles 1977). Over time, however, Knowles adopted a more nuanced position, viewing andragogy as a complementary framework that interacts with pedagogical theories (Knowles 1989; Merriam 2001).

	Pedagogy (Teacher-Directed Learning)	Andragogy (Self-Directed Learning)
Assumptions		
Concept of the Learner	Dependent Personality	Increasing Autonomy
Learner's Experience	Of Little Value	A Rich Resource for Learning
Readiness to Learn	Varies with Levels of Maturation	Develops from Life Tasks and Problems
Time Perspective	Delayed Application	Immediate Application
Learning Orientation	Subject-Centred	Task or Problem-Centred
Motivation	External Rewards and Punishments	Internal Incentives, Curiosity
Design Elements		
Learning Climate	Oriented towards Authority, Formal, Competitive	Informal, Mutually Respectful, Consensual, Collaborative, Supportive
Planning	By the Teacher	By Participative Decision-Making
Needs Assessment	By the Teacher	By Mutual Assessment
Objectives	Set by the Teacher	By Joint Negotiation
Designing a Learning Plan	Content Units, Course Syllabus, Logical Sequence	Learning Projects, Learning Content – Sequenced in Terms of Readiness
Learning Activities	Content Transmission Techniques, Assigned Readings	Inquiry Projects, Independent Study, Experimental Technique
Evaluation	By the Teacher	By Mutual Assessment of Self-Collected Evidence

Summary table 2. Key Characteristics of Pedagogy and Andragogy[15]

It is possible to identify six fundamental principles which form the basis of andragogy:

1. *The learner's self-concept*:

[15] This table has been adapted from Knowles (1977: 211).

> "Adults have a self-concept of being responsible for their own decisions and for their own lives. Once they have arrived at that self-concept, they develop a deep psychological need to be seen and treated by others as capable of self-direction" (Knowles, Holton & Swanson 2005: 65).

Unlike young learners, adults tend to develop a strong sense of self-awareness and autonomy, which translates into a desire to actively participate in decisions related to their educational journey.

2. *The need to know*:

> "Adults need to know why they have to learn something before undertaking to learn it" (ibid.: 64).

Learning something new can be demanding, especially for older adults or individuals with limited educational opportunities (Formosa 2012). For this reason, it is essential for them to understand the relevance and benefits of a given material before committing to study (Knowles 1970). When the purpose of learning is clear, motivation tends to increase (Wlodkowski 2011).

3. *The role of the learner's experience*:

> "Adults come into an educational activity with both a greater volume and a different quality of experience from that of youths. By virtue of simply having lived longer, they have accumulated more experience than they had as youths. But they also have had a different kind of experience. This difference in quantity and quality of experience has several consequences for adult education." (Knowles, Holton & Swanson 2005: 65-66).

Since experience is deeply intertwined with personal identity, adults often need to revisit or reinterpret what they already know in order to meaningfully deal with the study of a subject (Merriam & Bierema 2014). As a result, students' profiles may highly differ in terms of learning styles, motivational drivers, needs, interests, and goals (Knowles, Holton & Swanson 2005). This calls for flexible and individualized teaching strategies that acknowledge and build on learners' backgrounds (Merriam, Caffarella & Baumgartner 2020). Nevertheless, past experience can also act as a barrier, when it fosters rigid thinking or resistance to change based on entrenched assumptions (Christie et al. 2015). For this reason, both personal history and previous learning, positive or negative, play a critical role in shaping how adults respond to new learning opportunities.

4. *Readiness to learn*:

> "Adults become ready to learn those things they need to know and be able to do in order to cope effectively with their real-life situations." (Knowles, Holton & Swanson 2005: 67).

Adults' enthusiasm for learning tends to grow when they perceive its relevance to personal or professional challenges. Recognising the practical value of what they are studying enhances their motivation (Wlodkowski 2011).

5. *Orientation to learning*:

> "Adult learners are life-centered (or task-centered or problem-centered) […] and are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they

> confront in their real-life situations" (Knowles, Holton & Swanson 2005: 67).

Rather than showing interest in abstract or purely theoretical content, senior students tend to value learning that offers clear, real-world application. Therefore, adult education should emphasise the development of practical skills that can be employed in everyday or work-related contexts.

6. *Motivation*:

> "Adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like), but the most potent motivators are internal pressures (the desire for increased job satisfaction, self-esteem, quality of life, and the like)" (ibid.: 68).

In adult learning, the drive to study often comes from within rather than from external rewards. Yet, even strong internal motivation can falter when learners face discouraging past experiences, time constraints, or teaching methods that fail to meet their needs (Wlodkowski 2011). Support, therefore, implies not only providing relevant content but also creating conditions that account for adult learners' circumstances and self-perceptions (Knowles, Holton & Swanson 2005; Jarvis 2004).

It is worth stressing that technological advancement has provided fertile ground for the implementation of andragogical principles in education aimed at mature students (Gul & Uz Bilgin 2020). E-learning platforms, mobile applications, and Computer-Assisted Language Learning (CALL) environments allow for greater flexibility and autonomy, qualities that align closely with the needs and preferences of adult learners (ibid.). Digital tools support self-paced study, peer collaboration, and

task-oriented problem-solving, reinforcing the andragogical emphasis on experiential, purposeful learning (ibid.). As Huang (2002) argues, online technologies can facilitate knowledge and skill acquisition. However, resistance to technology may persist among older adults, particularly those with limited digital literacy (Kasworm & Londoner 2000). This underscores the importance of adopting thoughtful instructional design, since it is not the technology *per se*, but the way it is used pedagogically – or andragogically – that determines its educational value.

In this regard, the integration of playful elements with technological tools warrants particular attention, as a valuable strategy to enrich the learning experience by making it more interactive, engaging, and meaningful. As Grünewald, Kneip and Kozica (2019) observe, Digital Game-Based Learning (DGBL), gamification, and Serious Games (SGs) can be effectively employed to support adult learning, particularly in professional training and lifelong education, where sustained motivation and real-world applicability are essential. Thus, game-oriented instructional design holds significant potential for advancing andragogical principles within digitally mediated environments.

2.3.2. From Andragogy to Geragogy

The marked increase in the aging population worldwide continues to challenge conventional assumptions about later life, along with the role of older adults within society (Luise 2024; Cardona 2024). As previously stressed, aging is no longer viewed only as a biological process, but as a complex condition profoundly shaped by psychological and cultural factors (Laslett 2008; Cardona 2024). In this light, learning is regarded as a key resource for promoting autonomy, cognitive health, and social participation in senior students (Antoniou, Gunasekera & Wong 2013; Pikhart & Klimova 2020).

It is against this backdrop that geragogy has developed. First introduced in the 1970s as an interdisciplinary research branch focused on helping individuals cope with the physiological, emotional, and social changes associated with aging, its scope gradually expanded to the teaching and learning of older adults in both formal and informal educational settings (Cardona 2024). Over time, geragogy evolved within geriatric studies, where it came to be recognised as an education-oriented subfield of gerontology, defined by a set of principles and practices promoting a vital and active old age (ibid.). The term occurred for the first time in the *Trattato di Gerontologia e Geriatria* (*Treatise on Gerontology and Geriatrics*) by Fumagalli and Antonini (1973)[16].

Field	Focus
Geriatrics	A branch of medicine that deals with the diseases and care of older adults.[17]
Gerontology	The scientific study of old age and of the process of aging.[18]
Geragogy	A branch of gerontology concerned with educational practices tailored to older adults, taking into account their specific needs, experiences, and skills.[19]

Summary table 3. A comparative overview of geriatrics, gerontology, and geragogy

Central to geragogy is the principle that learning is a lifelong process (Formosa 2012). Far from being limited by age, older adults benefit from intellectually

[16] Francesco Maria Antonini and Carlo Fumagalli were pioneering contributors to the development of geriatric medicine and aging studies. Their *Trattato di Gerontologia e Geriatria* (1973) was published at a time when awareness of population aging was beginning to grow in the late 1960s. This publication represents one of the earliest attempts to draw a link between gerontological research and educational practices for older adults. It frames geragogy as a specialised branch of gerontology, placing it in comparative perspective with pedagogy, while adapting its learning principles to the needs of older adults.

[17] Oxford University Press. (n.d.). Geriatrics, n. In *Oxford English dictionary*. Retrieved October 15, 2025, from <https://doi.org/10.1093/OED/1158792313>.

[18] Oxford University Press. (n.d.). Gerontology, n. In *Oxford English dictionary*. Retrieved October 15, 2025, from <https://doi.org/10.1093/OED/1174448929>.

[19] This definition does not occur verbatim in the sources consulted but has been reconstructed synthetically from several formulations found in the literature (see, among others, Cardona 2024; Findsen & Formosa 2012; Danver 2016).

stimulating activities that contribute to preserve cognitive function (Antoniou, Gunasekera & Wong 2013). In this respect, it offers an educational perspective on aging that complements the biomedical focus of geriatrics and the psychosocial approach of gerontology (Cardona 2024).

	Andragogy	**Geragogy**
Learner Profile	Adult learners (typically in mid-life), self-directed and in full possession of their cognitive faculties	Older adults with evolving abilities and diverse needs
Educational Context	Learning environments suited to adults pursuing career development or personal growth	Learning environments adapted to accommodate age-related needs (cognitive, physical, and social changes)
Learning Purpose	Focus on productivity, goals and lifelong learning	Emphasis on well-being, autonomy, and active aging
Instructional Design	Learner-centred approach valuing experience and internal motivation	Learner-centred approach adapted for older learners
Pacing and Accessibility	Recognises the need to tailor pace and content to adults' goals, contexts, and prior knowledge	Greater focus on clarity, pace, flexibility, and accessibility
Social Dimension	Emphasis on individual progress through peer-collaboration	Emphasis on individual progress through intergenerational and peer-collaboration
Role of Prior Experience	Highly valued	Highly valued
Autonomy and Self-Direction	Learners are expected to manage their learning independently	Supports autonomy with guidance and scaffolding, since ability for self-direction may be affected by age, confidence, and previous experience

Summary table 4. A Comparative Overview of Andragogy and Geragogy

To better understand the implications of later-life learning, a comparison between geragogy and andragogy can offer helpful insights into their shared principles and distinct features (see Table 4 for a comprehensive overview). These frameworks both stress that adult learners differ significantly from children in terms of motivation, experience, and learning needs, so that they contribute to a rethinking of education beyond pedagogical theories designed for younger learners (Cardona 2024). However, as formulated by Knowles (1970), andragogy focuses on the adult learner in general terms, portraying them as self-directed, goal-oriented, and in full possession of their cognitive abilities. Geragogy conversely reorients this model by specifically addressing the later stages of adulthood, where cognitive and physical changes may significantly affect the learning experience (Cardona 2024).

Geragogy reshapes the adult education paradigm considering the evolving skills, vulnerabilities, and aspirations of older individuals, retaining the core learner-centred values of andragogy, such as the relevance of prior knowledge and accumulated life experience, as well as the importance of autonomy in the learning process (Formosa 2012; Findsen & Formosa 2012).

Nonetheless, it lays special emphasis on adapting to a more manageable learning pace, ensuring accessible formats, fostering a supportive environment, and encouraging peer or intergenerational exchanges (Cardona 2024). These approaches are not mutually exclusive, but complementary, as geragogy extends and refines andragogical principles in response to later-life conditions (Findsen & Formosa 2016). Crucially, it also reframes the purpose of learning in senior years, shifting the focus away from productivity or professional advancement to well-being, autonomy, and continued active participation in society (Formosa 2014).

Geragogy provides a theoretical framework for education in later life, offering principles that support the learning needs of older adults across various contexts. However, when focusing specifically on the domain of SLA, a more targeted perspective is required. This has led to the development of Foreign Language (FL)

geragogy, or glottogeragogy, as a subfield rooted in educational linguistics, which applies and refines geragogical principles within the specific context of FL instruction for older learners (Cardona 2024). Rather than simply adapting methods designed for young or mid-life adult students, this approach recognises that senior learners have distinct affective needs and specific reasons for learning a second language (Cardona & Luise 2018). Moreover, it is grounded in the assumption – now widely supported in the literature – that not only is L2 learning possible in later adulthood, but that it may yield substantial cognitive, emotional, and social benefits when adequately supported (Antoniou, Gunasekera & Wong 2013; Bak et al. 2016; Pikhart & Klimova 2020).

Drawing on insights from gerontology, applied linguistics, and educational psychology, glottogeragogy accounts for a range of variables that shape the learning experience of older adults. As Cardona (2024) highlights, these include:

- Neuropsychological and cognitive considerations, as older adults may experience reduced processing speed, limitations in working memory, and sensory decline. These are all aspects which demand adjustments in instructional pacing, clarity, and the use of multimodal reinforcement.

- Learners' prior knowledge and accumulated life experiences, which can serve as scaffolding for new linguistic input and support the consolidation of learning through meaningful associations.

- The potential contribution of cognitive reserve and compensatory mechanisms, which play a crucial role in sustaining mental flexibility, allowing older learners to successfully manage language acquisition tasks despite age-related decline.

A noteworthy aspect of glottogeragogy is that it is not exclusively confined to methodological concerns to SLA, since it also embraces a critical stance towards ageist stereotypes that often influence perceptions of older adults and their relationship to education (Formosa 2012; Luise 2024). As Ramírez Gómez (2016b) points out, this demographic is frequently depicted as cognitively incapable or resistant to learning. Glottogeragogy actively contests such representations, affirming the right of older people to access FLL. Therefore, it offers a sociopolitical response to age-based exclusion in educational contexts (Cardona 2024; Formosa 2012; Twigg & Martin 2015).

Six fundamental assumptions (Cardona 2024) may be identified that distinguish glottogeragogy from conventional methods adopted for adult FL teaching:

1. Educability: Glottogeragogy maintains that language acquisition is possible at any age, countering biologically deterministic views that once dominated language learning theories.

2. Gratuitousness and Pleasure: Unlike younger learners, whose motivation is often tied to grades or job prospects, older adults tend to pursue language study for sheer enjoyment, or personal fulfilment.

3. Freedom: The time available in later life is not perceived as idle or lacking purpose, but rather as a "liberated time" (ibid.: 30), that is, a valuable opportunity to carry out meaningful and socially relevant activities without productivity-based pressures.

4. Social Engagement: Language learning is seen as a powerful means of fostering or restoring social connections, preventing isolation, and promoting active citizenship.

5. Intergenerationality: Glottogeragogical models encourage opportunities for cross-generational interaction, helping older learners stay engaged in rapidly evolving sociolinguistic landscapes.

6. Affectivity: The emotional dimension of learning is considered central, not incidental. Positive affect (i.e., a sense of belonging, enjoyment, or confidence) supports language retention and perseverance in later-life learners.

The points outlined above reflect a learner-centred and humanistic ethos that is consistent with the core values of geragogy, specifically attuned to the challenges of SLA. Adopting this perspective implies a rethinking of traditional roles in the classroom, fostering inclusive practices and critical awareness of the structural barriers that may hinder older adults' access to effective language learning (Ramírez Gómez 2016b).

In sum, glottogeragogy adapts instructional methods to the needs of older language learners and challenges the ways in which age is constructed within educational discourse and practice. By resisting stereotypes and advocating for inclusive approaches, it promotes a more equitable vision of L2 learning in later life. This view also invites further reflection on the role of both ageist and anti-ageist discourses in shaping how older adults are portrayed, perceived, and positioned within educational settings.

2.4. Age, Identity, and Discourse: Cultural Representations, Stereotypes, and Counter-Narratives

Increasing attention has been devoted in scholarly literature to the ways in which age is represented and interpreted through discourse, cultural norms, and social interaction (see Coupland 2009; Twigg & Martin 2015). People's life course acquires meaning

through recurring narratives and everyday language, which in turn influence the formation of age identity (Gullette 2004; Andrew 2012; Bucholtz & Hall 2005). As Andrew (2012) argues, aging is better understood as a socially constructed and context-dependent phenomenon, rather than a mere biological condition.

This view has informed research in political economy, communication sciences, critical gerontology, and humanities (ibid.). Despite their differing orientations, these fields converge within the area of age studies, manifesting a shared interest in the symbolic and discursive processes that give age its social significance (ibid.). Among these, cultural studies and discourse-oriented sociolinguistics are especially relevant, as they offer more developed theoretical and methodological tools in the absence of a fully articulated theory of age, a gap that other disciplines have not yet sufficiently addressed (ibid.). Cultural studies explore the portrayal of different life stages in media, institutions, and everyday contexts (Gullette 2004; Twigg & Martin 2015), whereas discourse-oriented sociolinguistics focuses on the way such meanings are enacted, contested, or reinforced through language (Coupland 1997; Nikander 2009). Taken together, these perspectives show how individuals come to occupy roles and positions throughout the lifespan, shaped by the stories societies tell and the linguistic practices through which age categories are defined (Andrew 2012). As Green (1993: 15) insightfully observes, terms such as “aging” or “the aged” carry no inherent meaning outside the discursive contexts in which they are used. Hence, their interpretation strictly relies on the cultural and linguistic conventions that shape them.

Aging discourse is intimately linked to the concept of time (Andrew 2012). Notably, in many non-Western countries, maturity is not primarily defined in numeric terms but understood through social hierarchies, intergenerational relationships, and accumulated life experience (ibid.). Historically, older adulthood has been associated with wisdom, respect, and social authority in several Asian, African, and Islamic traditions (Nelson 2005). These views are, however, being reshaped by accelerated urbanisation and industrialisation, aligning them closer with Western models, where

time is framed as linear, standardised, and quantifiable (Andrew 2012). Within such paradigm, the lifespan is segmented into fixed stages and milestones that often carry prescriptive expectations (Ariès 1962; Andrew 2012). This temporal logic continues to reinforce rigid assumptions about later life. Gullette (2004) points out that in Western societies, the decline narrative prevails as a pervasive cultural script that casts aging as a relentless process of deterioration. So deeply embedded in public discourse, this view ends up shaping individuals' perceptions even among those who are in their twenties or thirties (Andrew 2012). The media, along with institutional practices and ageist ideologies, help perpetuate this thought by opposing later life to earlier phases, typically regarded as periods of growth, expansion, and opportunity (Twigg & Martin 2015).

A longstanding counterpoint to the discourse of decline has been the idea of progress, which depicts the life course, from childhood to early adulthood, as a phase of gradual improvement, marked by growing autonomy, competence, and social recognition (Katz 2013). Once partly linked to the ethos of the so-called "American Dream" (Andrew 2012: 47), this interpretation presented adult life as a prolonged period of individual development and upward mobility in the workplace. Over time, however, this optimistic vision has eroded: although longevity has increased, cultural expectations now place the turning point towards decline ever earlier (Gullette 2004). This reconfiguration narrows the scope for alternative, more layered representations of later years, reinforcing reductive and biologically deterministic views of aging (Katz 2013).

Within this context, societal ageism is integral to the decline narrative. Coined by Butler (1969), the term broadly refers to discriminatory beliefs and practices directed not only at older adults but at any group judged primarily by the age factor. This form of bias operates across multiple levels, ranging from overt exclusion to subtle expectations of deterioration (Coupland 2001; Coupland, Coupland & Giles 1991). In Western culture, people in later life are still frequently portrayed in

stereotypical terms, often characterised as inflexible, self-centred, or cognitively impaired (Nelson 2005). These communicative strategies naturalise the idea of aging as a "second childhood" (Coupland, Coupland & Giles 1991: 12) and support an inverted-U view of the life course in which physical and cognitive abilities rise, peak, and then inevitably fall. Equally harmful is the discourse of disengagement, where older people are assumed to withdraw from social and economic contexts, particularly through retirement, facing the scourge of marginalization and invisibility (Andrew 2012).

Crucially, as already noted, ageism is not limited to older adulthood but extends across the entire lifespan. Middle-aged individuals are frequently labelled by cultural tropes such as the midlife crisis or the empty-nest syndrome, which reduce a complex stage of life to clichés of dissatisfaction, instability, or loss of purpose (Shweder 1998). Younger people, on the other hand, are often dismissed as emotionally immature, irresponsible, or lacking seriousness (Andrew 2012). These examples show that age-based prejudice is not unidirectional but rather intergenerational.

Even academic research is not immune to deficit assumptions. In the domain of Second Language Acquisition (SLA), senior students are sometimes perceived as inherently less capable than children, reinforcing a biologically deterministic view of learning (Singleton & Ryan 2004). On the contrary, as previously argued, such claims have been increasingly contested by studies showing that age alone is not a reliable predictor of success (Birdsong 2006; Pfenninger & Polz 2018). Factors such as motivation, prior knowledge, learning strategies, and cognitive reserve can play a decisive role in shaping linguistic outcomes (Singleton & Ryan, 2004; Cardona 2024; Luise 2024; Coupland, Coupland & Giles 1991).

Interestingly, stereotypes are not always overtly negative. Positive images also carry derogatory connotations, as they confine individual differences into fixed categories. Older adults are frequently idealised as affectionate grandparents or as exceptionally wise and dignified (Andrew 2012). Young people are associated with

physical attractiveness and sexuality, while children are commonly labelled as innocent or angelic (ibid.). In practice, however, these discursive ploys may contradict one another, promoting comforting clichés that distort and oversimplify reality (Featherstone & Hepworth 1991; Featherstone & Wernick 1995a; Featherstone & Hepworth 1995b).

Moreover, ageist discourses intersect with gender, ethnicity, and race (Andrew 2012). In medieval times, older women were branded as "witches" and have long appeared in fairy tales in the guise of "crones", "shrews", or "nags" (ibid.: 51). Women in midlife are often assigned the role of the "spiteful mother-in-law", whereas equivalent depictions for men remain far less common (Cruikshank 2003; Hazan 1994).



Figure 9. "Hansel and Gretel", illustration by Arthur Rackham, 1909[20]

[20] Image retrieved from: <http://www.surlalunefairytales.com/illustrations/hanselgretel/rackhamhansel.html>.

Alongside time, the body constitutes the other crucial dimension where ageist discourses unfold, acting as the material and symbolic site through which people experience and express aging, physical attractiveness, and socially sanctioned behaviours (Andrew 2012). Human beings are conceived as biopsychosocial entities, where biological, psychological, and social factors shape how later life is perceived and represented (Ainlay & Redfoot 1982; Cardona 2024).

Nonetheless, the idea of aging as a subjective experience is countered by a dominant narrative that reduces it to a mere biomedical issue, thereby linking it to a vision of relentless deterioration, especially in Western culture (Andrew 2012). In this light, senescence is largely construed as a form of pathology, marked by functional decline and deemed to require management or prevention through solutions such as plastic surgery, organ transplants, or joint replacements (ibid.). This perspective tends to allegedly overemphasize the threat of disease, disregarding the fact that many older adults remain healthy (Cruikshank 2003; Nelson 2005; Vincent 2006). In follows that the medicalisation of aging, in turn, is rooted in a cultural fear of death, which magnifies the tendency to equate old age with frailty.

In opposition to the deficit model, alternative viewpoints have emerged that seek to reframe later life in more affirmative terms. Since the 1970s anti-ageist discourses have promoted an understanding of old age, which is not regarded as a problem to be fixed but as a phase that carries opportunities for renewal and change (Andrew 2012). These counter-narratives contest the reduction of later life to dependency and loss, conversely offering less monolithic portrayals of aging.

On this account, two main strands can be distinguished. The first is closely tied to consumer culture and revolves around the pursuit of agelessness. Here, the so-called "aging industry" (Cole 1992: 222) advertises products and services that promise to conceal or reverse the visible signs of time, urging individuals to preserve youthful bodies and minds. In spite of its promise, this approach tends to shift responsibility

onto individuals, requiring them to constantly keep fit, healthy, and independent, while at the same time releasing social institutions and the medical profession from much of their role in the process (Calasanti 2005; Cole 1992; Cruikshank 2003; Vincent 2003). Ultimately, rather than dismantling the fear of getting older, this version of positive aging merely postpones the stigma attached to it (Andrew 2012).



Figure 10. Vintage Palmolive Advertisements from the 1950s[21]

The Palmolive advertisements, shown in Figure 10, highlight the gendered rhetoric through which beauty ideals were disseminated in the 1950s, often combining ageist assumptions with openly sexist undertones. Although contemporary marketing has moved away from such biased communication strategies, favouring more inclusive and aspirational narratives, the underlying premise has not changed substantially. Aging continues to be framed as a problem in need of remedies, a condition to be managed or concealed.

[21] *Daily Mail*. "Keep house-weight: outrageously sexist print ads from the 1950s featured known brands such as Palmolive, Mini Cooper, Kitchen Aid, and Hoover". Published April 28, 2015. Consulted September 2, 2025. Retrieved from: <https://www.dailymail.co.uk/femail/article-3061740/Keep-house-weight-outrageously-sexist-print-ads-1950s-known-brands-Palmolive-Mini-Cooper-Kitchen-Aid-Hoover.html>; <https://www.bygonely.com/vintage-palmolive-soap-ads/>.

A second orientation within positive aging discourse departs from the quest for eternal youth, conversely emphasising the intrinsic value of every stage of life. This perspective challenges cultural norms that elevate youth-centred ideals and opens space for alternative narratives that privilege well-being, self-fulfilment, and what Cruikshank (2003: 3) has described as "comfortable aging". In this view, older people actively reclaim control over their lives, resisting medicalised models that treat aging as a pathology (Vincent 2003). Hence, growing older becomes a matter of adaptation and meaning-making, where individuals can reconfigure their identities by building on past experiences (Tulle-Winton 1999).

In sum, anti-ageist discourses offer an alternative account of later life, regarded as a stage rich in opportunities and ongoing development. Beyond challenging stereotypes, they contribute to broadly reshape a cultural sensitivity that promotes the idea of aging as a healthy, meaningful process, free from any kind of stigma and reductive categorisations. This shift in perspective not only affects public attitudes but also scientific research, encouraging agendas that acknowledge the diversity of aging trajectories and highlight the potential for growth and resilience in older adulthood (see World Health Organization 2002). Placed in this context, geragogy acquires particular importance, as it directly contests the assumption that education loses its relevance as time goes by. It thus stands as a critical counter-discourse which, in harmony with anti-ageist narratives, amplifies the view that learning remains a lifelong resource and that older adults continue to hold value and purpose.

2.5. Cognitive and Affective Dimensions of Later-Life Language Learning

The discussion so far has addressed how the aging phenomenon is shaped by demographic transformations and sociocultural discourses through which later life is

framed, including the opposing narratives that either depict it as a stage of decline and marginalisation or affirm its potential for personal development, learning, and social inclusion. Moreover, particular attention has been devoted to Foreign Language Learning (FLL) for adult students, with reference to the controversies surrounding the Critical Period Hypothesis (CPH) as well as the perspectives of andragogy, geragogy, and glottogeragogy which reinforce the view that acquiring a second language (L2) in older adulthood is achievable and effective, yielding tangible results. Yet, this line of inquiry leads to essential questions that warrant further consideration:

1. If older adults are recognised as capable language learners, what specific physical and cognitive conditions make this possible?

2. To what extent do affective factors such as self-confidence, motivation, or internalised stereotypes influence senior students' engagement with a new language and their learning outcomes?

This calls for a closer look at the factors that support or hinder Second Language Acquisition (SLA) in later life. To this end, consistent with the concerns raised throughout this chapter, the following analysis moves more directly into the cognitive and affective processes that shape L2 learning for older adults.

First and foremost, it is worth stressing that age-related cognitive deterioration is often described as a lifelong process. According to research, it typically involves slower processing speed (Salthouse 2000), reduced working memory (Engle & Kane 2004), diminished learning and recall of new information (Lindenberger 2014), decreased attentional control (Park & Reuter-Lorenz 2009), weaker encoding of contextual information in memory (Naveh-Benjamin & Old 2008), and less efficient inhibitory control (Verhaeghen & Cerella 2008). In addition, changes in speech production have been observed (Wingfield & Grossmann 2006). These functional

declines are often preceded or accompanied by structural alterations in the brain, such as reduced functional connectivity, cortical thinning, and white matter integrity degradation (Damoiseaux et al. 2008).

Functions prone to decline	Functions relatively preserved
Processing speed	Semantic memory
Working memory	Procedural memory
Episodic memory	Sensory memory
Attentional control	
Inhibitory control	

Summary table 5. Cognitive functions most and least affected by aging

Memory is a particularly age-sensitive domain (Cardona 2023). Many people in their fifties or sixties may begin to notice lapses, for instance when they struggle to recall names, conversations, or bring past experiences to mind. This is known as "retrospective memory" (ibid.: 45). However, difficulties may also arise with "prospective memory" (ibid.: 45), which may imply forgetting future appointments or failing to remember to take medication at a specific time. These minor shortcomings are often interpreted as an unmistakable sign of aging, prompting older adults to draw unfavourable comparisons not only with younger individuals but also with the cognitive skills they believe they had in the past (ibid.).

Episodic autobiographical memory	Semantic autobiographical memory
Declines with age, especially for recent experiences.	Remains stable or may even improve.
Refers to specific events located in time and place.	Refers to general knowledge and facts about personal life experience.
Examples: remembering a recent social event, a holiday, or a conversation.	Examples: recalling a birthday date, job history, or names of close relatives.

Summary table 6. Episodic vs. Semantic Autobiographical Memory in Aging

Five types of memory can be distinguished, and evidence indicates that episodic and working memory are the most susceptible to age-related decline, whereas semantic, procedural, and sensory memory tend to remain relatively preserved (Luo & Craik 2008). Within this context, autobiographical memory is particularly relevant, encompassing both episodic and semantic aspects of personal experience (Cardona 2023). Episodic autobiographical memory allows individuals to remember specific events situated in time and place (i.e., a family gathering or a holiday). On the other hand, semantic autobiographical memory refers to more general facts about a person's life (i.e., their birthday, job, or names of close relatives). As people grow older, the first tends to decline, especially when it comes to recalling recent experiences in detail, while the latter usually remains stable and may even become more accessible with age, as it involves information that has been consolidated over time (Levine et al. 2002; Piolino et al. 2006).

Crucially, not all age-related changes in memory are biologically determined. As has been previously stressed, psychological factors such as negative self-perceptions and internalised beliefs associated with aging can also exert a strong influence (Cardona 2023). When older adults begin to doubt their cognitive abilities, this often stems from the weight of sociocultural narratives that associate aging with decline (Coupland, Coupland & Giles 1991; Andrew 2012). Such bias may reduce their sense of self-efficacy and, in turn, jeopardise both motivation and their confidence in using learning strategies that could otherwise prove effective, but are hindered by negative and unfounded misconceptions (Bandura 1997).

Yet, these subjective prejudices are challenged by findings showing that even in later adulthood the brain may retain a notable degree of plasticity, as neural connections would continue to reorganise in response to cognitive stimulation (Ramscar et al. 2014). This contradicts the perception that age necessarily entails a steady deterioration of learning abilities. Furthermore, researchers emphasise the key role of cognitive reserve, understood as the brain's resilience to neuropathology, which

is strengthened by factors such as education, sustained intellectual activity, and regular physical exercise (Stern 2002; Whalley et al. 2004). In practice, cognitive reserve acts as a compensatory mechanism, which allows older adults to cope with learning demands by drawing on broader vocabularies, consolidated study habits, and a wealth of life experience (Pfenninger & Polz 2018; Cardona 2024). Evidence from clinical studies further illustrates this point, as some individuals with biological markers of dementia remain symptom-free due to a high level of reserve (Stern 2009; Cabeza et al. 2018).

FLL is increasingly regarded as a particularly effective form of cognitive training (Antoniou, Gunasekera & Wong 2013). Acquiring a second language stimulates a wide network of brain regions, including the hippocampus, prefrontal cortex, and medial temporal lobe (Rodríguez-Fornells et al. 2009; Raz 2000), simultaneously activating phonological, grammatical, and semantic systems, together with attentional control[22] (Hickok & Poeppel 2007). Moreover, neuroimaging studies have shown that structural changes, such as increases in grey matter, can occur even in older adults after relatively short periods of L2 practice (Mårtensson et al. 2012; Stein et al. 2012). These results demonstrate that brain plasticity does not disappear with age but can still be stimulated in later life (Hofer 2009; Antoniou, Gunasekera & Wong 2013).

The idea that language use can consolidate cognitive resources is also supported by research on bilingualism, which has been associated with multiple advantages, including enhanced executive control, particularly at the level of monitoring, shifting, and inhibition (see Andrew 2012)[23]. Bilingual speakers have also been found to

[22] Phonological, grammatical, and semantic systems refer respectively to the brain processes involved in recognising speech sounds, applying language rules, and interpreting meaning (Friederici 2011). Attentional control indicates the ability to focus on relevant input, block distractions, and shift attention when needed, which are all actively recruited in L2 learning (see Linck 2014).

[23] In cognitive science, executive control typically refers to three core skills, namely, monitoring (detecting and managing cognitive conflicts), shifting (flexibly moving between tasks or rule sets), and inhibition (suppressing automatic or irrelevant responses) (Diamond 2013). In bilingual contexts, they are applied in specific ways: Speakers monitor which language they are using, shift between languages

experience delayed onset of dementia and greater cognitive reserve (Antoniou, Gunasekera & Wong 2013; Adesope et al. 2010; Bialystok et al. 2016). The constant management of two or more languages appears to stimulate structural and functional adaptations in the brain, which may in turn support healthier aging (Bialystok et al. 2016; Alladi et al. 2013).

Although lifelong bilingualism is not the focus of the present study, this body of work illustrates in a broader sense the cognitive potential of long-term exposure to an L2. It is precisely on this basis that scholars have begun to investigate whether similar benefits might also arise when functionally monolingual adults take up FLL later in life (Ramírez-Gómez 2016a). However, the available evidence is far from conclusive. Several studies point out that the identified gains are often confined to particular circumstances, such as lifestyle and age of acquisition, whereas others report no consistent advantage at all (Paap, Johnson & Sawi 2015; Bak et al. 2014; Cox 2017). Nonetheless, the debate on bilingualism bolsters the view that linguistic activity can foster resilience and adaptability in the aging brain (Pfenninger & Polz 2018).

Favourable cognitive and neurological conditions make FLL attainable in later adulthood, although they account for only part of the picture. Equally significant are the affective dynamics that shape how older learners engage with new linguistic input (see Cardona 2024). As previously discussed, emotions operate as a decisive filter. Anxiety, self-esteem, and motivation may heavily influence not only students' willingness to participate in the learning process, but also the outcomes they eventually achieve (ibid.). Internalised stereotypes and negative self-perceptions can erode confidence (Oxford 2018; Andrew, 2012). Conversely, sustained drive and a positive attitude may lead to improvements in cognitive performance, particularly when activities are perceived as meaningful and personally relevant (Knowles, Holton & Swanson 2005; Pfenninger & Polz 2018).

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depending on the communicative situation, and inhibit the non-target language to avoid interference (Bialystok 2017; Abutalebi & Green 2016).

Empirical evidence reinforces this link. Kliesch et al. (2018) present significant findings from a four-week English as a Foreign Language (EFL) programme involving learners aged 63-90. The intervention revealed not only progress in accuracy and inhibitory control but also notable socio-affective benefits, including an enhanced sense of reassurance and satisfaction, which in turn fuelled learners' active engagement (ibid.). Notably, these positive effects were consistent among the participants, corroborating the claim that late-life FL study can stimulate cognitive processes while simultaneously strengthening emotional resilience (ibid.).

Still, while attention to the affective dimension is essential for successful language learning, its potential can be undermined when instructional approaches reproduce ageist attitudes. The learning process should therefore avoid conditions that explicitly or implicitly generate feelings of inadequacy among older adults, such as comparisons with younger learners assumed to acquire languages more quickly and achieve more durable results, which risk amplifying anxiety and discouraging participation (Isopahkala-Bouret 2015). In addition, task-oriented methodologies turn out to be particularly suitable for senior students, since they treat language as a vehicle for accomplishing meaningful goals, fostering agency and helping learners better perceive their progress (Ellis 2003; Nunan 2004; Cardona & Luise 2018).

Beyond cognitive gains, L2 learning in later life also brings important psychological and social advantages. It can nurture motivation and self-esteem, while at the same time providing opportunities for social interaction that reduce feelings of isolation and amplify community involvement (Pfenninger & Polz 2018).

In sum, later-life language learning cannot be understood by isolating cognitive from affective factors. Neurological resources and compensatory mechanisms support learning potential in the third age, but it is the interplay with motivation, confidence, and how learners judge their own competence that determines their success. Rather than being seen as separate domains, the cognitive and emotional dimensions reinforce

one another, shaping both engagement and learning outcomes. Acknowledging this interdependence is essential not only for assessing language performance in older learners, but also for designing instructional approaches that respond to their specific needs and circumstances.

2.6. Enhancing Second Language Acquisition for Senior Students: The Role of LLS, TBL, and CALL

The relationship between aging and Second Language Acquisition (SLA) has been examined from multiple perspectives, revealing both challenges and resources that manifest across cognitive, social, and cultural domains (Ramírez Gómez 2016a; Cardona 2024; Andrew 2012). In this light, older adults are no longer viewed through the lens of inevitable decline, but rather as individuals capable of acquiring a second language (L2) by drawing on strengths such as the use of compensatory strategies (Ramírez Gómez 2016a; Cardona & Luise 2018; Cardona 2024; Pfenninger & Polz 2018).

Building on these insights, the focus must now move from explaining *why* seniors can successfully acquire an L2 to *how* this process can be effectively supported. Therefore, particular attention is given to Language Learning Strategies (LLS), Task-Based Learning (TBL), and Computer-Assisted Language Learning (CALL), which complement one another in facilitating SLA in the third age.

For over four decades scholars have attempted to identify the profile of "the good language learner"[24] (Luise 2024: 207), investigating the behaviours and strategies that

[24] Rubin (1975) was among the first to explore the distinctive traits of learners who achieve outstanding results in language study, arguing that "if we knew more about what the successful learners [do], we might be able to teach these strategies to poorer learners […]" (ibid: 42). She then outlined several features associated with skilled L2 speakers, including willingness to guess, readiness to take risks in communication, attention to both form and meaning, frequent practice, self-monitoring, and the ability

make some students more successful in acquiring an L2 than others. This gave rise to a systematic study of LLS, within which Rebecca Oxford's (1990) taxonomy has become particularly influential and remains widely applied in language teaching and curriculum design. Oxford distinguishes between direct and indirect strategies (ibid.). The first involve the active use of the target language and rely on the mental processes affecting linguistic performance, whereas the latter focus on organising, monitoring, and regulating the overall process of acquisition without requiring its immediate application (ibid.).

Direct strategies are commonly categorised as (ibid.):

- Compensatory strategies, which aim to help learners bridge gaps in their language competence by inferring meaning, integrating verbal and non-verbal codes, or resorting to synonyms and paraphrases.

- Memory strategies, used to learn and retrieve information by creating mental links through images, sounds, or movements.

- Cognitive strategies, allowing learners to manipulate the language by analysing, synthesising, and organising information, as well as practising sounds and linguistic structures.

Indirect strategies, conversely, include (ibid.):

- Metacognitive strategies, through which learners plan and evaluate their learning path, monitor the methods employed to learn a language, and develop awareness of their own styles and preferences.

to draw on contextual cues to infer meaning (ibid.). Rubin's pioneering work laid the groundwork for subsequent classifications of LLS, most notably Oxford's (1990) taxonomy.

- Affective strategies, which are aimed at managing anxiety, fostering motivation, and strengthening self-efficacy.

- Social strategies, based on peer-collaboration, the ability to learn through interaction, and the development of empathy.

Cohen (2011) complements Oxford's taxonomy by noting that LLS may serve two functions: supporting the process of learning and allowing the practical use of the target language in real communicative situations. This perspective highlights that LLS should not be considered a fixed set of procedures, but rather a versatile toolkit that learners can borrow, on the basis of specific contexts, goals, and personal preferences (Luise 2024). For older adults, this flexibility is especially valuable, since it allows them to consciously select and adapt them in ways that capitalise their accumulated knowledge, helping them compensate for possible age-related limitations in memory or information processing speed (see Cardona & Luise 2018; Ramírez Gómez 2016a; Pfenninger & Polz 2018).

However, research specifically revolving around the application of LLS among older learners remains comparatively limited. Ohly (2007) remarks on the paucity of studies investigating which strategies are commonly adopted by this age group. Nonetheless, she attempted to address the issue through an experiment involving senior learners of German as a foreign language. Her findings showed that cognitive and metacognitive strategies were the most frequently employed among the participants (ibid.).

Almost fifteen years later, Pawlak (2021) reached a similar conclusion, stressing that empirical studies exploring the use of LLS in later life are still "few and far between" (ibid.: 826), despite the growing popularity of language learning in older adulthood. He warns that this gap is "regrettable", since the skilful use of strategies

could make the process "truly more effective, self-directed, and enjoyable [for older learners]" (ibid.: 826).

Targeted L2 learning acquires particular relevance for senior students, as LLS may help to mediate complex factors that can either support or hinder their progress (Luise 2024). These include long biographical and educational histories, often involving previous experiences with language learning, as well as the impact of beliefs and stereotypes concerning older adults' learning abilities (ibid.). Moreover, personal variables such as self-efficacy, motivation, and attributional patterns play a crucial role, influencing how they approach and manage the learning process (ibid.)

As Ramírez Gómez (2016a) underlines, senior language students represent a highly heterogeneous group, which means that each individual needs to adopt personal mechanisms to support their learning. It is therefore essential to employ tools assessing their skills, their preferred learning strategies, and their study habits (ibid.). It can be also noted that many approach L2 study with preconceptions and beliefs shaped both by social stereotypes and by their own life and educational experiences (Formosa 2012; Ramírez Gómez 2016a; Oxford 2018). For example, as Luise (2024) highlights, an older student may remember mnemonic techniques that once proved effective, only to find that these no longer fit their current cognitive profile. Such situations stress the importance of implementing metacognitive training programmes (ibid.), which can support learners in critically reassessing their assumptions, recognising their strengths and limitations, and adapting or adopting strategies that remain effective in later life.

Oxford's (1990) taxonomy has provided a fundamental reference point for the classification of LLS and has inspired the development of instruments aimed at investigating their actual use. The most widely known is the *Strategy Inventory for Language Learning* (SILL), a self-report questionnaire developed by Oxford herself, which is frequently employed in research on LLS (Luise 2024). The SILL consists of a series of statements, organised according to Oxford's six strategies for language learning, which require students to rate, on a five-point Likert scale, how often they

implement specific actions that support the acquisition of an L2 (i.e., practising new vocabulary by using it in sentences, monitoring their comprehension during reading and listening tasks, or seeking support from peers by asking questions or working together)[25]. Thanks to its clarity and adaptability to various learning scenarios, the SILL provides large-scale quantitative data on the reported use of memory, cognitive, compensation, metacognitive, affective, and social strategies, offering a standardised basis for statistical comparison across different groups of learners and educational settings (see Hsiao & Oxford 2002; Oxford 2017).

However, the administration of questionnaires alone is not sufficient to gain a comprehensive understanding of the learning experience in later life. For this reason, research has increasingly relied on mixed methodologies, combining quantitative and qualitative criteria (Dörnyei 2006; Cardona & Luise 2018). Qualitative analysis is often carried out through autobiographical interviews, learning diaries, and classroom observations, which help to capture nuances that quantitative results cannot convey (Kalaja, Menezes & Barcelos 2013; Benson 2013; Ramírez Gómez 2016a). In doing so, it is possible to understand how learners interpret their progress and difficulties, how past educational experiences shape their current strategies for learning a language, what motivates or discourages them, and how classroom dynamics and peer interactions influence their engagement and performances.

A significant contribution in this direction is represented by the *VintAge* project (Cardona, Luise & Temporale 2023) built around a dedicated textbook, *Vintage. English for Seniors, A1*, specifically designed for learners over sixty at an elementary level to test the effectiveness of a tailored English language course. In this experimental study, learning strategies were investigated from two complementary perspectives, considering whether the participants applied them in practice and how their use was consolidated over the training programme (ibid.). The students were not

[25] For an overview of Oxford's taxonomy and subsequent developments in strategic competence research, see Oxford (1990), Oxford and Burry-Stock (1995), and Casani (2021).

only asked to report which strategies they adopted after each unit, but they were also guided through targeted activities intended to encourage the conscious use of LLS (ibid.). Their progress was monitored through pre- and post-intervention questionnaires, language tests, and classroom tasks (ibid.).

At the beginning of the course, the participants filled out a detailed baseline survey providing information on their educational background, previous exposure to foreign languages, and current communicative needs (ibid.). The questionnaire also included Likert-scale prompts intended to gauge their level of agreement with statements such as "memory inevitably declines with age" or "older adults are too slow to learn a new language", revealing the beliefs and potential stereotypes that could hinder their approach to study (ibid.). During the course, short in-class surveys invited learners to rate how useful they had found particular strategies embedded in the textbook, for example, whether repetition, note-taking, or pair/group work had helped them handle the communicative activities more effectively (ibid.). Finally, at the end of the programme, they took part in interviews and wrote reflective diaries, documenting possible shifts in their motivation, confidence, and self-perception (ibid.).

The *VintAge* project thus represents a valuable contribution to the field of language education for older adults. Its findings reinforce the view that LLS are a useful resource for the development of tailored learning paths (Cardona & Luise 2018; Luise 2024). Their identification and practical implementation would yield positive outcomes in terms of linguistic competence, but also offer insights into more subjective and personal dimensions, providing a deeper understanding of how to improve the overall quality of the language-learning experience in later life (Ramírez Gómez 2016a; Cardona & Luise 2018; Luise 2024).

While LLS turn out to be particularly useful in assessing how students regulate and support their own learning, it is also important to consider how these processes

can be encouraged through methods that prioritise interaction and meaningful language use.

In this respect, TBL is recognised for its effectiveness in promoting communicative competence, placing authentic, goal-oriented tasks at the centre of language learning (see Ellis 2003; Nunan 2004; Willis & Willis 2013; Long 2015; Samuda & Bygate 2008; Cardona & Luise 2018). In the context of SLA, TBL draws on the assumption that language development is fostered through exposure to comprehensible input (Krashen 1982), combined with opportunities for interaction and meaning negotiation. Within task-based frameworks, communicative activities are designed to provide learners with input that remains accessible while being slightly beyond their current level. This strategy encourages progression without overwhelming cognitive resources. At the same time, tasks naturally draw on learners' attention to linguistic forms when these become relevant to achieving a communicative goal. In this sense, the effectiveness of TBL can also be related to Schmidt's Noticing Hypothesis (1990), according to which learning occurs when students become aware of gaps between their own interlanguage and the target language, often through feedback, interaction, or communicative breakdowns.

This approach emerged between the late 1970s and early 1980s, when Nunan (1989) introduced it as an alternative to traditional language teaching, which was largely based on the transmission of grammatical and lexical knowledge through drills and rote memorization. TBL, in this sense, encourages the practical use of language in contextualised situations, facilitating the management of communicative challenges that typically arise in real life (Ellis 2003; Willis & Willis 2013). Learners are thus required to achieve specific goals (i.e., speaking with a doctor or booking accommodation abroad) by using modes of expression that are appropriate to specific sociolinguistic, relational, and cultural contexts. Hence, TBL balances linguistic accuracy with an awareness of the pragmatic dimension of communication.

Task-based methodologies also prove particularly effective in accommodating learner diversity. In mixed-ability classes the same activity can be successfully carried out in different ways, allowing each participant to personalise their strategies to achieve the desired outcome[26]. Moreover, given that TBL is inherently oriented towards problem-solving, it serves as a valuable means of fostering divergent thinking, supporting the exploration of multiple plausible solutions, all of which may be equally valid (Samuda & Bygate 2008). In so doing, students are naturally prompted to experiment, combine resources, and develop creative ways of expressing themselves in the target language (ibid.).

The relevance of TBL becomes even more evident in the context of andragogical and geragogical theories, which emphasise that later-life education should be problem-oriented and closely connected to learners' personal histories and needs (Cardona & Luise 2018; Formosa 2012; Luise 2024). TBL gives concrete expression to these principles by promoting a model of language study built around purposeful activities that older adults can readily recognise as meaningful and transferable to their own lives (Willis & Willis 2013). Examples may include planning a holiday itinerary, preparing recipes, ordering food in a restaurant, or taking part in small talks with relatives from abroad during family gatherings.

As argued before, seniors are primarily driven by intrinsic motivation (Knowles 1970), which implies that what they study must be personally relevant and practical. External rewards such as grades or certifications, typically associated with extrinsic motivation, carry little weight for this group (Cardona & Luise 2018). Therefore, TBL addresses these needs by linking tasks to their interests and passions, which can be expressed and explored in new linguistic contexts. Furthermore, its collaborative dimension encourages older adults to work towards shared objectives, providing

[26] See '*TBL and PBL: Two Learner-Centred Approaches'*, *TeachingEnglish* (British Council). Consulted October 17, 2025: <https://www.teachingenglish.org.uk/professional-development/teachers/knowing-subject/articles/tbl-and-pbl-two-learner-centred>.

opportunities to practise the language in an atmosphere of mutual support, which also enhances social and emotional well-being (Ramírez Gómez 2016a; Pikhart & Klimova 2020; Cardona 2024).

Any discussion of how language learning can be effectively supported must also take into account the role of technology, which today increasingly influences the ways languages are taught and learned. CALL, in particular, occupies a key position in the context of FL education. Beatty (2010) defines it as

> "[…] any process in which a learner uses a computer and, as a result, improves his or her language." (ibid.:7)

From its early stages, the field has evolved in close relation to both technological innovation and changing pedagogical paradigms. In the 1960s and 1970s, the first computer-based learning programmes followed behaviourist principles, relying heavily on repetitive drills and programmed instruction (Warschauer 1996). From the 1980s onwards, however, cognitivist and constructivist approaches redirected attention to language interaction as an essential strategy for fluency, drawing on Vygotsky's (1978) sociocultural theory, which emphasises the role of collaboration, mediation, and shared meaning-making in learning[27]. The rapid spread of the internet in the 1990s marked another turning point, giving learners unprecedented access to online resources such as digital dictionaries, corpora, and teaching materials (see Beatty 2010; Chapelle 2009).

Over the following decades, the web opened up new avenues for Computer-Mediated Communication (CMC), moving from asynchronous interaction through emails and online forums to real-time chats and video calls (Herring 2019; Warschauer 2001). Platforms such as MSN Messenger and Skype became widely popular in the

[27] On the evolution of CALL from behaviourist to constructivist orientations, see Chapelle (2001) and Warschauer (2000).

early 2000s, promoting authentic communication beyond the classroom among speakers from diverse cultural and linguistic backgrounds (Baek et al. 2017). The subsequent rise of social networking sites, together with advances in multimedia and mobile technologies, has further expanded opportunities for language exchange and learning (see Stockwell 2010; Reinhardt & Thorne 2016). In line with these developments, CALL has evolved towards increasingly interactive and learner-centred practices. Interestingly, over time such approaches have drawn on the pedagogical potential of games to enhance engagement and learning outcomes (Peterson 2016; Reinders 2012; Cornillie, Thorne & Desmet 2012). This explains why, particularly in recent decades, Digital Game-Based Learning (DGBL) and Serious Games (SGs) have gained remarkable popularity (see Prensky 2001a; Gee 2003; Deterding et al. 2011; Hamdaoui, Idrissi & Bennani 2022; Beil, Hensel & Rauscher 2017).

What distinguishes CALL from traditional classroom instruction is not simply the use of technology, but the new contexts for learning it creates. Among these, game- and simulation-based platforms are particularly noteworthy, as they provide spaces where experimentation, trial and error, as well as peer collaboration are integral to SLA (Reinders 2012; Cornillie, Thorne & Desmet 2012). Peterson (2011) emphasises that such environments provide rich linguistic input, promote negotiation of meaning, and encourage scaffolding through collaborative tasks, thus supporting measurable improvements in language performance.

Based on existing research, CALL proves especially valuable for older adults as it allows them to progress at their own pace and review content as often as they wish (Puebla et al. 2022; Schlomann, Even & Hammann 2022). This feature is particularly significant for those who tend to process new information more slowly and benefit from repeated exposure to the target language (Stockwell 2010). Its collaborative dimension helps counter social isolation and creates opportunities for meaningful interaction, which often serves as a major source of motivation in later life (Khosravi, Rezvani & Wiewiora 2016). Moreover, digital contexts can alleviate performance

anxiety in senior students who may fear being judged in face-to-face settings, since errors are reframed as a natural part of the learning process (Reinders & Hubbard 2013). Finally, CALL can be viewed as consistent with the principles of andragogy and geragogy, for instance, by promoting learner autonomy, and experience-based learning, which are central to adult (Knowles 1970) and later-life education (Ramírez Gómez 2016a).

Nevertheless, important challenges remain. The digital divide, reflected in the widening gap between younger and older generations, along with ageist assumptions portraying seniors as technologically incapable, represent significant barriers that can undermine their confidence and participation, thereby limiting the advantages that CALL can offer (Ivan & Cutler 2021; Gutiérrez-Pérez et al. 2023). Addressing these issues requires thoughtful pedagogical and design considerations: platforms should be accessible, interfaces intuitive, and materials adaptable to learners' cognitive and affective needs (Czaja & Lee 2007). When these conditions are met, CALL can better realise its inclusive potential, supporting rather than restricting learning opportunities for senior students.

In conclusion, L2 education has moved away from traditional, teacher-led models focused on grammar and rote learning – where students played a largely passive role – towards learner-centred methods, which promote active participation and the meaningful use of language in real communicative contexts (Nunan 1989; Willis & Willis 2013; Ellis 2003). Moreover, contemporary approaches place growing emphasis on making the learning path personally relevant, useful, and rewarding, an aspect that becomes particularly significant for older adults (Ramírez Gómez 2016a; Cardona & Luise 2018; Cardona 2024).

Three domains have been examined for their relevance to L2 learning in both younger and older students. When systematically applied, LLS provide valuable quantitative and qualitative data on learners' performances and attitudes (Dörnyei 2006; Cardona & Luise 2018; Kalaja, Menezes & Barcelos 2013; Benson 2013). From

a cognitive standpoint, they help reveal how they memorise, process, and consolidate the new linguistic input. At the same time, they offer a nuanced picture of the affective dimension of learning, showing how emotional factors, such as confidence, anxiety, and motivation, influence engagement and progress (Oxford 1990; Luise 2024). These insights offer teachers and researchers a more comprehensive understanding of how to improve the effectiveness and the overall quality of language courses.

TBL has been considered for its close alignment with the principles of contemporary language education, which no longer focuses exclusively on grammatical rules and vocabulary memorisation but promotes the use of language in authentic contexts (Ellis 2003; Nunan 2004; Willis & Willis 2013; Long 2015; Samuda & Bygate 2008; Cardona & Luise 2018). As discussed, this approach views communication not merely as a means to accomplish a goal, but as the central process through which language learning takes place. In this way, tasks provide purposeful contexts that stimulate interaction and make linguistic use highly effective. For these reasons, TBL proves particularly suited to senior learners, providing opportunities to use the target language in ways that enhance both competence and confidence (Cardona & Luise 2018; Formosa 2012; Luise 2024).

Finally, CALL has been included in this discussion for its growing relevance in contemporary language education, as an approach that integrates technology into the learning process and offers flexible, interactive environments supporting both individual and collaborative study (Chapelle 2009; Beatty 2010). It proves particularly valuable in fostering engagement and reducing anxiety, while providing opportunities for personalised learning paths (Reinders & Hubbard 2013). For older adults, such conditions help sustain motivation and participation, making CALL especially significant in the context of lifelong language learning (Pikhart & Klimova 2020; Ivan & Cutler 2021).

2.7. From Theory to Practice: Designing a Teaching Unit for Senior Learners of English

Research in neuroscience, cognitive psychology, and language education has shown that Second Language Acquisition (SLA) remains an attainable goal in later life, provided that instruction is responsive to the needs of older adults (Antoniou, Gunasekera & Wong 2013; Bak et al. 2016; Pfenninger & Polz 2018). Learning ability does not simply wane with age but reflects a complex interplay of individual, psychological, cognitive, sociocultural and environmental factors that extend well beyond biological determinism (Andrew 2012; Cardona 2024; Luise 2024). This perspective is consistent with the principle of lifelong educability, which invites a reconsideration of second language (L2) learning that acknowledges both challenges and resources associated with aging (Ramírez Gómez 2016a).

On this basis, the next chapter will take a more practical direction, presenting a teaching unit conceived for older elementary learners of English (A1/A2), within which the prototype of a Serious Game (SG) is integrated to make language practice more engaging, interactive, and contextually meaningful. As a preliminary step towards this goal, the following discussion draws on insights from andragogy, glottogeragogy, and Task-Based Learning (TBL), offering a set of considerations for the design of effective learning materials.

1. Valuing Learners' Experience and Identity in Task Design

Developing language activities for older adults starts with acknowledging their strengths rather than merely dwelling on their limitations, an approach widely supported in glottogeragogical research (Cardona 2024; Formosa 2012; Luise 2024). Such a shift in perspective challenges persistent misconceptions about age and learning, promoting a more proactive and empowering view of later-life education

(Ramírez Gómez 2016a; Findsen & Formosa 2012). Research shows that many senior students bring valuable assets to the classroom, such as well-established study habits, discipline, and a strong sense of purpose (Pikhart & Klimova 2020; Oxford 2018). Learning tends to be more effective when new input connects with prior knowledge and lived experiences (Cardona & Luise 2018). Consequently, the proposed materials should revolve around familiar and personally relevant topics, such as travel, cooking, family, or health-related situations.

Autobiographical experience can also reinforce the link between language and identity. Participants might, for instance, be invited to share memories of a meaningful trip, a favourite recipe, or a typical working day. These short storytelling exercises aim to turn linguistic practice into an act of self-expression, strengthening both memory and emotional involvement. Opportunities for self-assessment and peer feedback at the end of each lesson can further consolidate confidence and promote awareness of progress in tangible ways.

2. Creating Tasks that are Clear, Coherent, and Conceptually Linked

Effective instructional design values both the quality of the content to be taught and the way it is presented to learners. As people age, processing speed may decline and working memory tends to be less efficient (Antoniou, Gunasekera & Wong 2013; Pikhart & Klimova 2020). For this reason, new material should be introduced in small, well-organised segments with frequent opportunities for practice and review. A clear page layout, consistent task format, and explicit objectives help sustain attention and minimise cognitive strain.

Yet, research indicates that semantic memory remains largely preserved in healthy ageing, allowing older students to draw on prior knowledge when approaching new content (Cardona 2024; Bak et al. 2016). Learning is enhanced when activities are designed to highlight meaningful connections, either relating new information to

prior knowledge or grouping concepts within a coherent topic. For example, a vocabulary activity might invite students to cluster words within the same semantic field (e.g., ingredients, utensils, and actions in a cooking scenario), which can facilitate recall by strengthening the associative links among lexical items. Likewise, short listening tasks based on everyday dialogues can guide learners to infer meaning through familiar contexts rather than through abstract explanation. Maintaining thematic consistency across reading, writing, grammar, and pronunciation activities reinforces understanding and contributes to a more intuitive and personally relevant learning experience.

3. Supporting Motivation and Confidence through Task Design

Task design should take emotional factors into account. Research consistently shows that motivation, self-esteem, and perceived self-efficacy have a positive impact on those who may internalise age-related stereotypes suggesting that language learning is "just for the young" (see Dörnyei & Ushioda 2021; Ramírez Gómez 2016a). Such beliefs can easily erode confidence and limit engagement (Findsen & Formosa 2012; Pikhart & Klimova 2020). To counter this risk, activities should be planned so that outcomes remain achievable (Oxford 2018).

Setting small, realistic goals (i.e., completing a short dialogue or understanding a brief text) can help participants perceive their progress, enhancing their enthusiasm and motivation. Group tasks may further support this aim: preparing a shopping list, discussing a recipe, or role-playing a restaurant situation creates opportunities for cooperation in a relaxed, stimulating atmosphere. Working towards shared objectives encourages learners to view mistakes as a natural and constructive aspect of learning, thereby reinforcing emotional resilience. Finally, moments of reflection and peer exchange can strengthen self-confidence and a sense of belonging.

4. Integrating Language Learning Strategies (LLS)

Encouraging self-awareness is a central goal in later-life education (Formosa 2012; Findsen & Formosa 2012; Cardona 2024). In this regard, Language Learning Strategies (LLS) provide senior students with practical tools for planning, monitoring, and reflecting on their learning approaches (Oxford 1990; Oxford 1995; Oxford 2017; Oxford 2018). Within andragogical and glottogeragogical perspectives, Oxford's taxonomy remains a key reference for promoting autonomy and self-regulation, values that align closely with student-centred approaches.

In designing the teaching unit, LLS should not be treated separately but woven into classroom activities. After completing a task, short reflective prompts – such as "What helped me remember these expressions?" or "Which part of this activity was easier or harder for me?" – can guide learners to evaluate their performance and develop metacognitive awareness, becoming more mindful of the strategies that best support their progress. Likewise, brief self-assessment notes or learning diaries can be used to record achievements over time, strengthening both confidence and a growing sense of control in the learning process.

5. Structuring Student-Centred Activities

Student-centred learning, in line with andragogical and glottogeragogical principles, holds that learners achieve better results when they take an active role in the process rather than relying entirely on the teacher, who acts as a guide, offering support and feedback to foster autonomy (Knowles 1970; Formosa 2012; Cardona 2024). Therefore, lessons should combine clear guidance with opportunities for individual initiative (Luise 2024; Ramírez Gómez 2016a).

This approach can be effectively implemented through activities that promote participation and collaboration. A first area of application concerns receptive skills. During listening practice, for instance, students might be asked to predict the topic or situation of a short dialogue through images or keywords, then listen for specific information, and finally compare their results with peers to confirm or revise their answers. A similar pattern can be followed in reading. As a preliminary step, students may skim the title and keywords to anticipate the topic, then read in order to identify central ideas and relevant details. Afterwards, they discuss their interpretations in pairs or small groups.

For productive skills, comparable strategies can be adopted. As for speaking activities, the teacher may introduce short model dialogues, containing expressions and sentence structures relevant to the communicative task at hand. Learners then adapt and personalise these models to role-play realistic situations, such as arranging a medical appointment, describing a trip, or chatting with a friend abroad. Throughout this process, the teacher provides linguistic support, clarifies meaning, and encourages them to use vocabulary and structures more freely, helping them build fluency and confidence in spontaneous interaction.

When dealing with writing, students might start from guided examples (e.g., short notes, messages, or brief descriptions) and progressively reshape them to express their own ideas, experiences, or needs.

In all cases, the teacher should provide linguistic support, clarify meaning, and encourage flexible language use, helping learners build fluency and confidence.

The five considerations outlined above represent an attempt to translate andragogical and glottogeragogical principles into practical criteria that may guide the design of language activities suited to older learners. This approach seeks to combine instructional support with learner autonomy through a gradual progression from controlled to semi-controlled and freer practice, enabling students to build

independence while progressing at a sustainable pace reinforced by clear input, constructive feedback, and positive reinforcement.

Glottogeragogy provides the theoretical ground on which the teaching unit can be structured, promoting a learning design that supports attention, prevents cognitive overload, and ensures that linguistic input is introduced in clear, accessible ways. Materials should be approachable and relevant to learners' needs, while topic selection ought to reflect their personal interests and life experience. Collaborative work, moreover, can enhance participation and strengthen a sense of community within the classroom.

The unit's activities should be shaped by clear communicative goals and authentic situations, drawing inspiration from TBL to promote purposeful interaction and adaptable language use.

Finally, the inclusion of a Serious Game (SG), developed within a Computer-Assisted Language Learning (CALL) framework, extends this pedagogical rationale into the digital environment. The SG would serve as a flexible complement to classroom work, offering interactive, low-pressure opportunities to practise and consolidate learning, helping sustain engagement and reinforce confidence over time.

CHAPTER 3

ENGLISH FOR TRAVELLING: A TEACHING UNIT AND VR SERIOUS GAME DESIGNED FOR OLDER ADULTS

3.1. Overview of the Research Project

The theoretical considerations developed in the previous chapters on game-oriented approaches to learning and Second Language Acquisition (SLA) in later adulthood find their practical application in the design of a teaching unit for senior beginner learners of English and a Serious Game (SG) prototype developed in a Virtual Reality (VR) environment.

Before illustrating the project in detail, it is helpful to highlight the theoretical pillars underlying its development. In this regard, some preliminary considerations relate to principles of digital game design, which have guided the planning of the SG prototype. A basic point to acknowledge is that games operate through rules and goals that give structure and meaning to the player's experience (Michael & Chen 2006; Hays 2005). This idea has informed the design of the SG from the outset, ensuring that its internal organisation remains coherent and easy to follow.

Moreover, the literature on SGs targeting older adults emphasises the central role of everyday experience, since senior learners tend to favour a type of training which replicates situations they may need to handle in real life (Gutiérrez-Pérez et al. 2023). For this reason, the prototype has been structured around scenes inspired by authentic travel-related contexts, allowing its target students to practise basic English in scenarios that feel concrete and relevant.

Research further highlights the importance of keeping an ideal balance between challenge and skill to support motivation without creating unnecessary pressure (Csikszentmihalyi 1990; Scott, Casey & Kane 2022). Consistent with this principle, each step of the simulation revolves around a single, clearly identifiable action, such as locating a sign, choosing an item, or responding to a short prompt. In addition, given the linguistic profile of the target group, the amount of language required remains intentionally minimal, and new input is introduced only once the previous action is completed. These choices help prevent cognitive overload, keeping the experience engaging yet manageable.

Finally, studies on motivation and user experience suggest that environments perceived as accessible and easy to navigate increase learners' willingness to engage in a game (Jaramillo, Criollo & Luján 2022). For this reason, the interface, game mechanics and visual layout have been designed to be intuitive and unobtrusive, reducing potential sources of anxiety and supporting a sense of control. As Ivan and Cutler (2021) point out, this is an essential condition when working with older adults who may have limited technological literacy.

The second pillar supporting the aims of the project focuses on the conditions that make second language (L2) learning still possible in senior years. As research on language education points out, age does not hinder the possibility of learning, provided that teaching practices are sensitive to the cognitive, affective, psychological, and social changes associated with later life (Ramírez Gómez 2016a; Cardona & Luise 2018; Pfenninger & Singleton 2017). Evidence questioning the assumptions of the Critical Period Hypothesis (CPH) highlights that learning remains viable beyond maturity thanks to the persistence of neuroplasticity and the role of cognitive reserve (Bialystok, Craik & Freedman 2007; Antoniou, Gunasekera & Wong 2013). These resources allow adults to integrate new knowledge by drawing on their previous experience, established by study habits and accumulated life experience.

In this context, the contributions of andragogy, geragogy and glottogeragogy become particularly significant. These perspectives move away from the determinism of the CPH and reframe later-life learning as a process that can be effective when instruction reflects the needs, strengths and life experience of older adults (Knowles 1970; Cardona 2024; Ramírez Gómez 2016a). Within this view, teaching is most productive when the learning path is organised around clear objectives and practical tasks that can be naturally transferred in everyday life (Willis & Willis 2013; Cardona & Luise 2018; Formosa 2012; Luise 2024).

Furthermore, learning should take place giving learners a certain degree of autonomy, although scaffolding remains essential to build confidence and motivation, creating the conditions for achieving successful outcomes (Knowles 1970; Formosa 2012; Cardona 2024; Luise 2024). These principles have shaped both the teaching unit and the SG prototype.

Moreover, psychological and sociocultural aspects also need to be taken into account. As discussed in Chapter 2, ageist discourses contribute to promote derogatory representations of later life, encouraging self-limitations that negatively impact older adults' willingness to engage in language courses or experiment with technology (Andrew 2012). In contrast, more inspirational perspectives aligned with lifelong learning and active aging function as counternarratives stressing the role of education in promoting well-being, self-esteem and a renewed sense of purpose in the third age (WHO 2002; Dogra et al. 2022). These ideas have guided the project, so that the teaching unit is conceived to offer a space where senior learners feel recognised and supported during lessons, while the SG prototype has been designed to provide a safe environment where they can try out English without fear of judgement, making the overall experience feel personally rewarding.

Based on these considerations, the project has been articulated into the following steps. The first consisted in identifying the learning needs, preferences, and expectations of a group of senior students selected for this research. To this end, an

exploratory survey was administered to twenty participants enrolled in a local University of the Third Age[1]. The questionnaire gathered relevant information on their educational background, technological skills, and previous exposure to English. It also aimed to investigate their openness to learning through a VR-based SG.

These findings were instrumental in defining the next stage of the project, focused on the planning and design of the teaching unit, as they provided clear indications regarding the thematic area in which to frame the linguistic content, the level of the target language, and the learning rationale to adopt in the materials.

The third and last stage was devoted to the SG prototype, planned as a series of virtual environments corresponding to the five modules which make up the unit. The simulation has been designed to offer an immersive experience where learners are prompted to re-use the language they have learnt in flexible and dynamic ways.

3.2. Analysis and Interpretation of the survey results

A survey was administered to a group of twenty senior learners of English attending the University of the Third Age (U3A) in Santeramo in Colle (Italy), to gather relevant information for the development of a teaching unit and the prototype of a Serious Game (SG) tailored to their learning profile. The questionnaire was delivered online via Google Forms and was conceived to be user-friendly considering that the level of digital literacy could vary among the participants. A combination of quantitative and qualitative data was collected respectively through multiple-choice and open-ended questions, in order to gain valuable insights into their educational background, interests, needs, as well as their language and digital skills. The achieved results are described, analysed and interpreted below.

[1] Further details will be provided below.

Section 1 includes questions aimed at collecting personal information. The study deliberately targeted the "young-old" age bracket (64-74 years) as defined by the World Health Organization (WHO), although a small margin of flexibility was allowed to include individuals with comparable educational experience and cognitive condition. As a result, the respondents eventually involved in the survey fall within the 62-74 age range, with a mean of approximately 68-69 years (Figure 1).

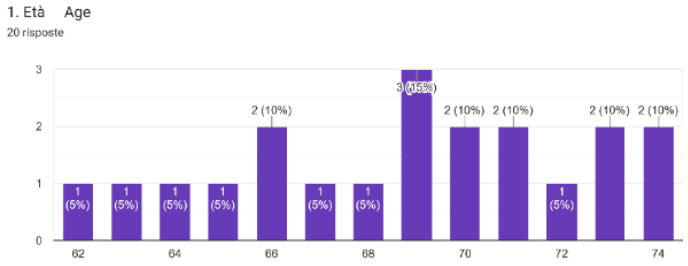


Figure 1. Age distribution of participants.

As Figure 2 shows, women (eleven participants, 55%) are slightly more represented within the sample compared to men (nine participants, 45%).

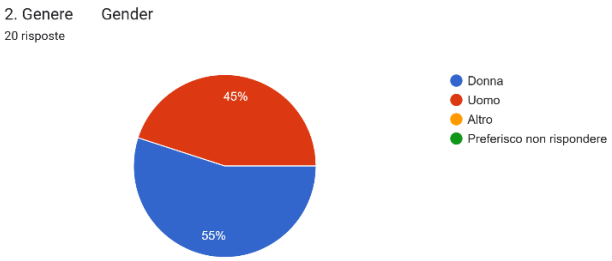


Figure 2. Gender distribution of participants.

As for their educational background, thirteen students (65%) hold a high-school diploma, whereas seven (35%) have completed lower secondary education (Figure 3).

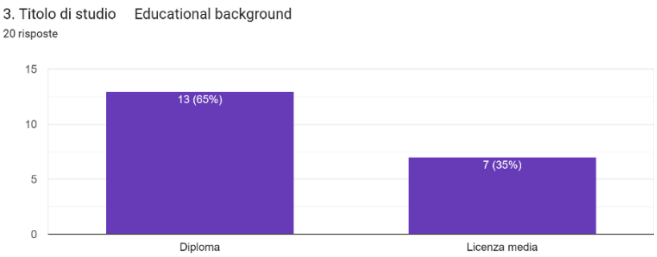
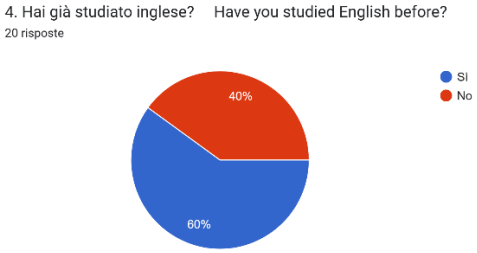


Figure 3. Educational background of participants.

With respect to previous exposure to English, twelve people (60% of the sample) report having studied it before, whereas eight of them (40%) have no prior experience with the language (Figure 4a). Those who have already studied English mostly identify themselves as elementary learners (58.3%), while the remaining 41.7% assess their level as beginner. No participant indicates an intermediate or advanced level (Figure 4b).



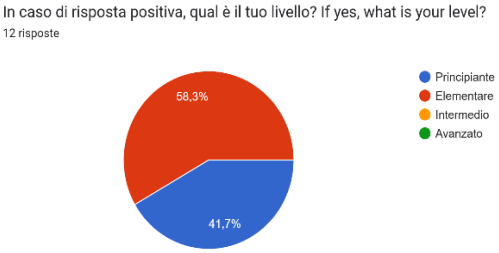


Figure 4a. Figure 4a. Previous exposure to English.

Figure 4b. Self-reported level of English

Overall, these preliminary results highlight that the group is relatively uniform in terms of age, yet their schooling paths and study trajectories are more mixed, with varied levels of formal education and, in some cases, extended gaps in structured learning. Moreover, the level of English is generally low. This has provided a useful reference point for assessing an appropriate linguistic level and teaching strategy to adopt in the materials and activities included in both the unit and the SG.

The survey also explores how participants engage with digital devices. As is shown in Figure 5a and Table 5b, the smartphone clearly plays a central role in their daily life, as all respondents have one, and fourteen report using it frequently. In contrast, the tablet has a much weaker presence (eight participants do not have this device at all). Finally, computer access is almost negligible (ten do not own a PC or laptop, and eight never use one).

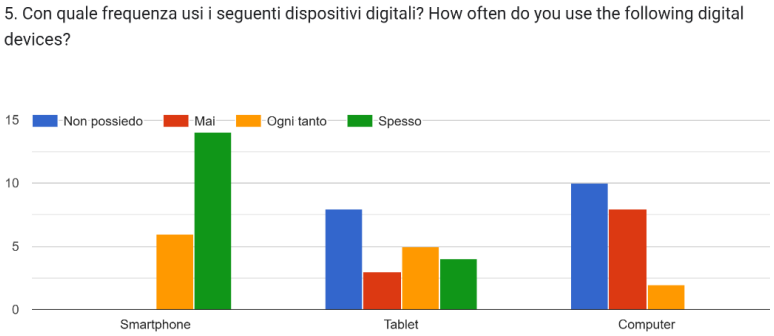


Figure 5a. Frequency of use of digital devices (visual representation)

Device	Do not own	Never	Occasionally	Often
Smartphone	0	0	6	14
Tablet	8	3	5	4
Computer (PC/Laptop)	10	8	2	0

Table 5b. Frequency of use of digital devices (numerical values)

These findings help identify which technological devices participants are familiar with, an aspect that is particularly relevant given that the SG prototype developed in this study relies on the immersive potential of Virtual Reality (VR). Therefore, considering their limited experience with computers, it seems reasonable to assume

that any VR-based session would require in-person assistance rather than being carried out independently.

Section 2 explores the extent to which different thematic areas appeal to senior participants, asking them to rate four proposed topics for learning English (Figure 6) on a five-point Likert scale (1 = not interesting at all; 5 = very interesting).

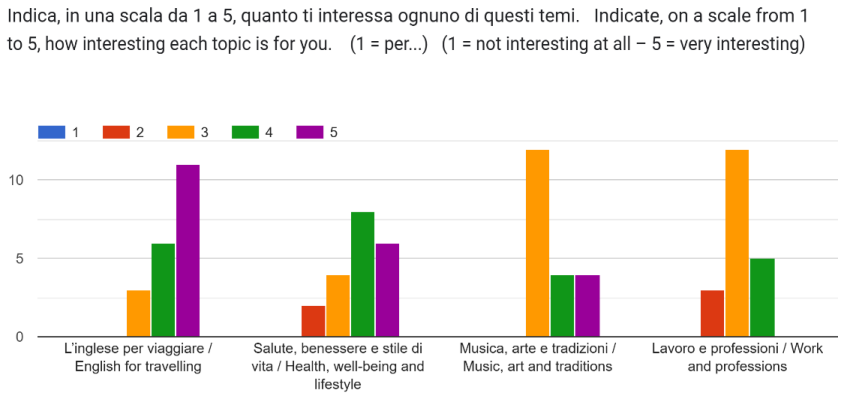


Figure 6. Interest levels across four thematic areas

The results show that "English for travel" clearly stands out as the most appreciated situational context according to twelve participants (60%; mean rating 4,4/5). This suggests that they associate English primarily with practical, situation-based use, linked to mobility, independence, and social interaction. "Music, art and traditions" ranks second, selected by four students (20%; mean rating 3.9/5). "Health, wellbeing and lifestyle" is noticeably lower, attracting only three of them (15%; mean rating 3.6/5). Finally, "Work and professions" receives only one preference (5%; mean rating 3,1/5), which indicates that older adults do not tend to view English learning in relation to professional goals.

Based on students' responses, "English for travel" has been selected as the main thematic frame for both the teaching unit and the VR-based SG prototype, in order to align the content with the interests expressed by the target group. It is worth stressing

that choosing a topic that learners find relevant anchors the design of instructional material to situations they genuinely wish to handle in real communicative contexts increasing the effectiveness of the learning experience.

A further area of investigation involves students' relation with VR. On this account, Section 3 of the survey aims to explore whether senior participants have had any previous experience with this technology, whether they would be keen on using it for educational purposes, and how appealing they find the idea of learning while being immersed in a simulated environment. In addition, one question asks them to rate their curiosity on a five-point scale and to indicate whether they would be willing to try a guided VR session at least once.

The results highlight that none of them has ever engaged with VR (Figure 7), which confirms that this technology is still perceived as unfamiliar.

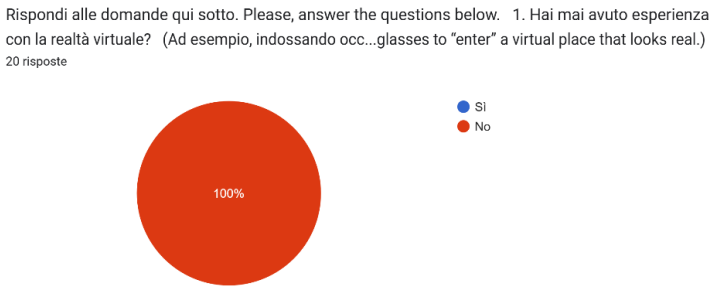


Figure 7. Previous VR experience

Nonetheless, the overall level of curiosity is relatively high (3.9 out of 5), and attitudes towards this technology are generally positive, as the bar chart in Figure 8 shows.

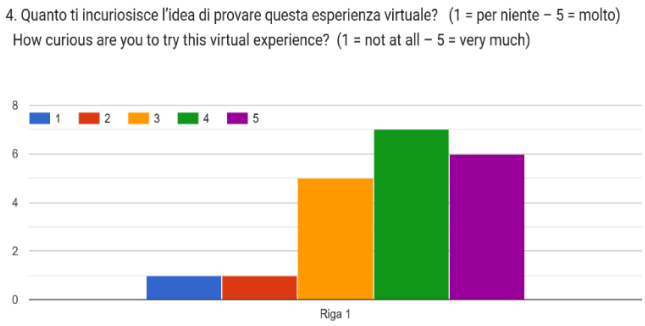


Figure 8. Degree of curiosity concerning VR experience

Furthermore, 65% of respondents (Figure 9) state that they would be willing to use VR as a tool for learning English, whereas 20% express uncertainty rather than explicit resistance. Only 15% reject the idea outright, which may simply reflect a lack of confidence with technology or fear that the system might be difficult to manage.

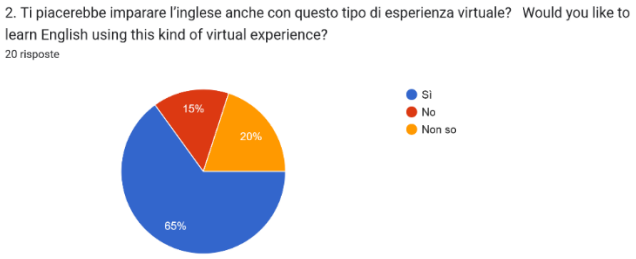


Figure 9. Willingness to use VR for learning English

Particularly striking is the result reported in Figure 10. Despite having no prior experience with VR, 75% of participants indicate they would be willing to try it, provided that teacher or tutor support is available.

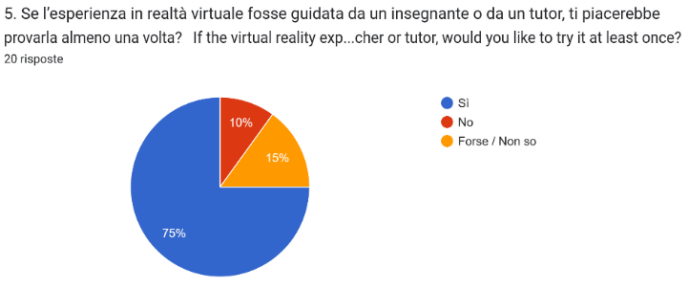


Figure 10. Willingness to try VR if guided by a tutor

This suggests that motivation to use VR is not unconditional but relies on the reassurance offered by guided assistance. This interpretation is consistent with the pie chart displayed in Figure 11, since 80% agree that learning "as if in a real place" could make the experience more pleasant and useful.

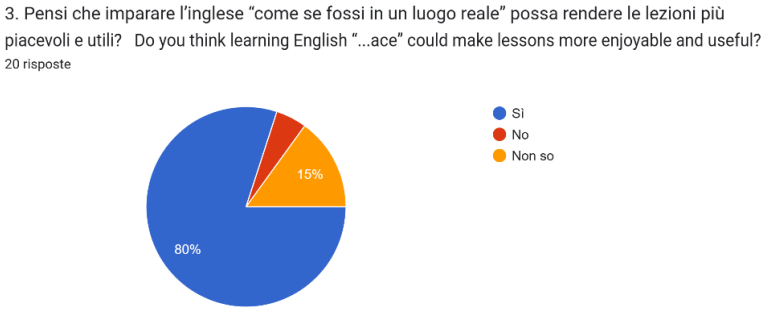


Figure 11. Perceived usefulness of immersive technology for learning

This reinforces the idea that VR is intuitively recognised as an authentic and engaging instrument, especially in relation to the possibility of simulating realistic communicative situations.

From an educational perspective, the collected data provide the basis for some key design considerations, underlying the SG prototype that will be presented in more detail later in the chapter. A major design concern indeed relates to the user's first

contact with the VR equipment, which cannot be assumed to be intuitive. Therefore, a familiarisation stage has been included at the beginning of the gameplay experience to help learners feel comfortable with the headset and controllers in order to easily interact with the virtual environment. Moreover, in line with the profile of the interviewees, the decision to develop the VR tasks as short, simple micro-scenarios rather than long episodes aims to minimise potential cognitive or sensory overload, directing attention towards communicative goals rather than device management. Finally, all the activities proposed in the game take into consideration the chance of providing continuous scaffolding, either from the teacher or through in-game elements, such as the use of a support bar that may remain visible to assist the player.

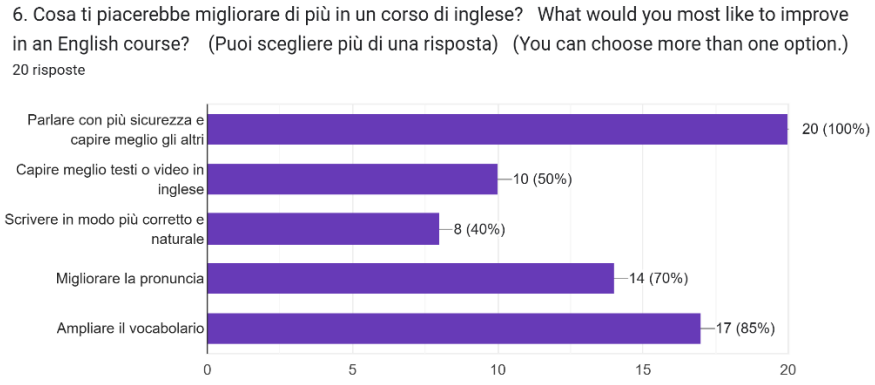


Figure 12. Preferred areas for improvement in an English course

The survey also includes a question about which aspects of English participants would especially like to improve (Figure 12). The picture that emerges is very clear, as all respondents (100%) wish to communicate with greater confidence and to understand other speakers more easily. Interest in vocabulary (85%) and pronunciation (70%) also remains high, which confirms that the language areas particularly favoured are directly linked to spoken interaction.

Although speaking, vocabulary and pronunciation differ in percentage, they still stand out as the most frequently selected options. This suggests that oral communication lies at the core of learners' purposes. In this sense, vocabulary and pronunciation may be viewed as two complementary areas that facilitate verbal exchange, since using the right words and pronouncing them clearly makes the interaction overall more intelligible and manageable. Conversely, understanding English texts and videos (50%) as well as writing in a more accurate and natural way (40%) attract comparatively less attention.

Based on these results, it can be stated that learners' needs are mainly oriented towards situational and functional use of English. Consequently, both the teaching unit and the SG prototype have been designed around authentic contexts prioritising speaking, vocabulary and pronunciation. Nonetheless, grammar, listening and reading have also been incorporated into the learning materials, as they contribute to strengthening language awareness and ensuring a comprehensive command of the language. It should be noted that all receptive and productive skills are practised through a student-centred approach.

The first part of the questionnaire aimed to gather quantitative data through multiple-choice questions, offering a clear overview of the participants' interests, educational background, and technological habits. Conversely, the closing section was designed to collect qualitative evidence, allowing respondents to articulate their ideas more freely and to elaborate on aspects that structured prompts could only capture in part.

To this end, two open-ended tasks were included to encourage participants to express their ideas in their first language (L1), namely Italian. More accurately, they were asked to suggest a topic or activity they wished to explore in an English course for adults, and to describe a practical situation in which they hoped to use the language more effectively. All participants provided at least one answer: fourteen wrote detailed

comments, while six expressed their preferences more briefly through short keyword lists.

Overall, their feedback was provided in clear and straightforward language, showing how they would use English in situations that matter to them. The range of collected ideas is remarkably wide. In addition to travel- and culture-related themes, some mentioned other domains, such as technology, pronunciation, and small everyday interactions they aspire to handle more confidently in English. Examples of typical answers (either paraphrased or reported verbatim) include:

- *"*Having simple conversations with tourists"
- "Understanding a menu and ordering at a restaurant"
- "Making online bookings and using apps in English"
- "Exploring food and traditions of foreign countries"
- "Explaining symptoms at the pharmacy"
- "Understanding songs and films in English"
- "Using clearer pronunciation to speak without anxiety"

Table 13 offers an overview of the main topics identified through an analysis of recurring patterns emerging from students' answers. The results confirm that travel is by far the most frequently mentioned theme (17 participants), showing that learners tend to associate L2 learning with practical situations they may encounter while visiting another country. References to food and local culture occur in 13 cases and are often linked to experiences typically associated with travelling abroad, such as understanding menus, or learning about traditional dishes and local customs. Across 9 instances, issues concerning health and practical needs come up, indicating that learners view English as a useful instrument for handling stressful situations, for example, describing symptoms at a pharmacy or asking for help. Moreover, in 8 answers it is highlighted that senior participants would like to be able to confidently

engage in everyday small talks, while the focus on pronunciation and communicative confidence (4 responses) reflects their desire to speak more clearly and without anxiety. Unsurprisingly, as part of their everyday lives, technology is mentioned 7 times, in connection with their need to manage English effectively in the digital sphere, for instance, when using apps, sending messages, or making online reservations. Finally, cultural curiosity (occurring 6 times) points to students' wish to experience English through songs, films, and other forms of art, in order to understand both the language and the cultural sensibilities it conveys.

Main theme	No. of responses (out of 20)	Typical examples
Travel situations	17	airport, hotel, restaurant, public transport, asking for directions in a foreign city.
Food and local culture	13	understanding typical recipes, local habits and celebrations
Health and practical needs	9	pharmacy, doctors, describing symptoms or problems
Everyday small talk	8	tourists, informal chats, asking for information
Technology and online bookings	7	use of apps, messages, emails, digital purchases or reservations
Cultural curiosity (music, films, arts)	6	understanding songs, films, or tourist guides
Pronunciation and communicative confidence	4	speaking without anxiety, improving clarity and comprehension

Table 13. Overview of main themes identified in the qualitative section of the survey

Based on the results illustrated above, it can be stated that the selected group of students views English as both a valuable means of communication and a vehicle for understanding other cultures. Their answers point to a clear preference for learning the

language in authentic contexts. Equally noteworthy is the spontaneous mention of technology among the topics raised. In the first section of the survey, participants were asked to complete multiple-choice questions investigating their familiarity with specific digital devices as well as their potential interest in exploring VR within the SG prototype. What is striking here, however, is that in the open-ended responses from Section 4, where they could freely express their ideas, students brought up technology on their own, showing that they view it as a relevant dimension to transfer and apply their linguistic skills. This finding challenges the common assumption that older learners tend to systematically exclude this domain from their personal lives.

The survey as a whole confirms that senior learners emerge as a receptive and curious group, willing to experiment with innovative tools provided that these remain accessible and supported by teacher guidance. The findings have served as a crucial starting point for planning and developing the outputs of this project. The travel theme, enriched with cultural references, has been selected for the design of the teaching unit, consistent with the interests and preferences expressed by the target group. The VR-based SG then complements the unit by extending its learning objectives into an immersive and authentic environment. These virtual spaces have been conceived to help learners consolidate their language competence, taking part in communicative situations that are slightly less predictable than those experienced during classroom activities. The goal is to strengthen their knowledge of English and refine their problem-solving skills. In this framework, the teaching unit and the SG operate in synergy: the former provides the methodological structure and linguistic goals, while the latter brings them to life through immersive practice. Together, they form a unified educational ecosystem in which student-centred methods, glottogeragogical principles and technological mediation converge to amplify the learning experience.

3.3. English for Travelling: Teaching Unit and Serious Game Prototype

English for Travelling is a teaching unit designed for senior beginner learners (aged 64-74) to help them acquire basic language skills for communicating with ease in English-speaking contexts. The unit draws on the results of the exploratory survey analysed previously, which show that the participants involved in the project tend to prefer practising a Foreign Language (FL) in authentic and practical situations. Their interests and needs, as expressed in their answers, along with their low, if not entirely absent, knowledge of English and their uneven educational backgrounds, have helped determine not only the selection of topics and linguistic content, but also the degree of scaffolding and pacing required to create a pathway that remains accessible and encourages learners to consolidate what they learn.

Conceived as a complete, self-contained mini-course, the unit is structured around a continuous narrative developed across five modules. Each presents a real-life situation related to travel and everyday communication, gradually expanding learners' linguistic and communicative resources. Some ideas for its design draw inspiration from *English File – Beginner* (Latham-Koenig, Oxenden & Lambert 2019), a course book addressing A1 students, which has been published by Oxford University Press. Nevertheless, the materials have been completely reworked and expanded to create a logical sequence of lessons built around an original narrative thread and a coherent methodology tailored to the young-old.

In line with this orientation, the unit integrates a glottogeragogical perspective that shapes the way activities are organised. Simple instructions, explicit lesson goals and familiar task formats help senior beginners understand what they are expected to do, reducing uncertainty and preventing unnecessary cognitive load. Short and carefully sequenced tasks revisit key language at different points in the lesson, supporting gradual progress through small, attainable steps. Emotional engagement is also reinforced through a storyline built around situations that resonate with older

adults' experiences, which makes the content relatable and personally meaningful. All activities follow a student-centred approach that gives learners space to work with a degree of autonomy and take an active role in their learning process.

The engaging potential of the lessons is reinforced by targeted gamification strategies that make practice feel more natural and immediate. In the first module, for instance, numbers are revised through the game of bingo, while basic transactional expressions are practised through short role-plays set in familiar locations, such as a café, where learners discuss prices and express amounts in standard English (e.g., *two pounds fifty*). Playful elements are thus integrated into the instructional flow in order to encourage spontaneous interaction and practical use of the language.

The unit is further complemented by a 3D Serious Game (SG) prototype in Virtual Reality (VR), which would provide an immersive space where learners could rehearse and strengthen the language covered in class. It should be clarified that the purpose of this research project was not to actually devise a videogame, but to sketch out a model for possible future implementation. In this prospective scenario, learners would wear a VR headset and use two hand controllers to move within realistic environments, interacting with objects and characters. This type of experience lends itself to enhancing problem-solving skills and fostering more spontaneous communication.

At the end of each module, once both the classroom activities and the virtual simulation have been completed, learners carry out a brief post-reflective task in the *My Diary* section. They may use their first language (L1) to answer 5-6 prompts that invite them to link the content just covered to episodes from their own life. This format has been designed according to andragogical and glottogeragogical principles, as it supports self-awareness and stimulates episodic memory, two aspects that play a crucial role in later-life learning. In this light, students are encouraged to look back at the material addressed during the module and connect it with situations, habits or

experiences drawn from their personal history, which helps them see how the lesson content relates to their everyday lives.

Moreover, the layout of the *My Diary* section remains consistent throughout the unit, giving senior learners a format they can recognise and follow with ease. However, the way the work around these prompts is organised would vary slightly from one module to the next, reflecting the pedagogical principle according to which a certain degree of variation is required to foster engagement.

Each module also includes a brief section dedicated to Language Learning Strategies (LLS), inspired by Oxford's (1990) taxonomy. In this section, senior learners are invited to identify and try out simple techniques for memorising and practising new language items, for example repeating words aloud or using them in short personal sentences. Bringing attention to these strategies helps them understand which methods they adopt more naturally in the acquisition of an L2.

At this stage, activities dedicated to LLS have been fully developed only for Module 1, which serves as an example of how this strand could be extended across the entire unit. Including a set of activities designed to explore how learners approach the study of an L2 allows teachers and course designers to observe how senior beginners engage with new linguistic material, highlighting the techniques that emerge spontaneously, those that may benefit from modelling, and the areas where additional guidance might still be needed. Insights of this kind help refine the quality of the learning materials and adjust strategy work so that it genuinely supports learners' progress. This may imply revising the pacing of the lessons, strengthening scaffolding, or introducing targeted guidance where it proves most useful.

3.3.1. Storyline and Characters

The teaching unit storyline revolves around Anna, a 64-year-old Italian on her first holiday in London. Shortly after arriving at Heathrow Airport, she meets Helen, a friendly British traveller with a genuine interest in Italian language and culture. Their first conversation takes place at the airport café, where a small misunderstanding with the barista prompts a brief exchange that naturally leads them to introduce themselves. From that moment on, they keep in touch throughout Anna's stay.

Character	**Nationality**	**Role**	**Function**
Anna Tucci	Italian	Protagonist; Senior learner on her first holiday in London.	Represents the learners on their path towards greater competence and confidence in English.
Helen Cooper	British (UK English)	Friendly guide Anna meets at Heathrow; She is genuinely passionate about Italian language and culture.	Helps Anna complete language tasks and models clear pronunciation, while also showing how to use basic structures and common phrases.
Tom Harris	U.S. (American English)	Helen's friend from New York Anna meets during her stay.	Brings in exposure to American English, adding a touch of linguistic variety.
Local staff	British	Service figures featuring in the five modules of the unit (barista, receptionist, waiter, vendor)	Provide simple, realistic service interactions.

As the days go by, Helen helps Anna handle situations that are typical for a tourist visiting London, such as buying a travel card for the Underground or asking for directions around the city. During one of their meetings, Anna gets to know Tom, a dear friend of Helen's from New York who has moved to London to be closer to his grandchildren. His presence offers a natural exposure to US American English.

The table below provides an overview of the characters who appear throughout the unit, together with their role and function within the story.

3.3.2. Learning Rationale behind the unit and the serious game

The unit is divided into five modules centred on different moments of Anna's stay in London. Each scene is set in a specific place and provides the situation through which grammar, vocabulary, pronunciation and communicative functions are introduced. The sequencing of lessons moves from controlled to semi-controlled and freer practice, allowing learners to develop increasing independence in the activities they carry out, eventually mastering the new language items. All tasks are built around a single communicative theme specifically introduced in each module, so that new language is always presented in context.

Linguistic input is paced carefully to both avoid overload and match the cognitive profiles of senior beginners. The verb *to be*, for example, is introduced in three steps so that learners can focus on a manageable set of forms at a time (Module 1: *I* and *you*; Module 2: *he*, *she*, *it*; Module 3: *we*, *you*, *they*). A similar logic guides the introduction of numbers, which move from a basic range (0-20) in Module 1 to higher values (up to 90 and then up to 1,000) respectively in Modules 2 and 3.

It is also important to stress that all activities follow a student-centred approach consistent with both glottogeragogical principles and the *Cambridge English* methodology. Tasks are never conceived as purely grammatical or purely receptive, as the focus remains on communication, interaction and meaning-making. Learners work together, exchange information and overcome challenges collaboratively, while the teacher intervenes mainly to guide, scaffold and elicit responses rather than merely "lecturing". This encourages mutual support, reduces performance anxiety and helps learners build confidence through shared practice.

Within this framework, the design of both the teaching unit and the VR-based SG is informed by well-established assumptions in SLA, with particular reference to how linguistic material is selected and sequenced. In line with Krashen's (1982) Input Hypothesis, the linguistic material introduced in the SG is designed to remain accessible for A1 learners, while a limited number of new elements is introduced through the situational context and the visual features of the game.

At the same time, the SG is designed to expose learners to noticeable input (Schmidt 1990), as specific linguistic forms become relevant when they are needed to complete a task or respond to feedback. Language is therefore reused in context, for instance when learners need to understand a prompt, react to an unexpected outcome, or adjust their response after a communication problem, supporting its consolidation through use. The table that follows illustrates how classroom activities are complemented by the VR-based SG prototype, allowing learners to transfer and apply the language practised in class within an immersive environment.

Each module then ends with a brief *My Diary* activity, which supports consolidation by helping learners reflect on what they have learnt and connect it to personal experiences before moving on to the next stage.

Module	**Narrative Episode**	**Setting**	**Language & Communicative Focus**	**Serious Game (3D VR Environment)**	**My Diary**
Module 1 – Meeting at the Airport Café	Anna arrives at Heathrow Airport and bumps into Helen. After a small misunderstanding with the barista, they start a friendly conversation that leads to their first	Heathrow Airport Café	**Grammar**: verb be (I / you – affirmative, negative, questions) **Vocabulary**: Numbers 0–20, days of the week Pronunciation: /θ/, /ð/, /h/ **Functions**: Introducing yourself, asking and answering simple	Learners interact in a virtual café, ordering items, giving their names, and responding to basic questions from a virtual barista.	Remembering how it felt to order something while travelling abroad.

	exchange in English.		questions, ordering a drink.		
Module 2 – Checking In at the Hotel	Anna arrives at the hotel ready for the check-in. She learns how to spell her name correctly, provide basic personal information, and confirm details with the receptionist.	Hotel Reception	**Grammar**: verb be – he/she/it – affirmative, negative, questions; possessive adjectives; simple wh-questions (What / Where) **Vocabulary**: Personal information (name, address, nationality, phone number); numbers 20-90. **Pronunciation**: Spelling alphabet; stress in names and numbers **Functions**: Checking in, giving information, asking for clarification.	Learners practise a hotel check-in interaction, filling in a registration form, correcting mistakes, and responding to short questions in a virtual hotel setting.	Past experiences in hotels: check-in moments, spelling names, first impressions.
Module 3 – Getting Around the City	The next morning, Helen shows Anna how to use the Underground. They buy tickets and ask for directions to the British Museum.	London Tube Station / Street	**Grammar**: verb to be – we/you/they – Affirmative, negative, questions; There is / there are; prepositions of place and movement; imperatives **Vocabulary**: Transport, public places, directions, numbers 100-1000. **Pronunciation**: Weak forms in directions ('to	Learners navigate through London streets using a 3D map, asking virtual guides or other characters for directions.	Reflecting on challenges or small misadventures when trying to ask for directions in an unfamiliar place.

			the station', 'go straight on') **Functions**: Asking for and giving directions; understanding simple instructions.		
Module 4 – Eating Out	Anna and Helen meet Tom at a restaurant for lunch. They talk about food preferences and local traditions. Anna successfully orders her meal and pays the bill.	Restaurant	**Grammar**: Countable / uncountable nouns; some / any; can for requests **Vocabulary**: Food and drinks; menu items; prices **Pronunciation**: Word stress in food items; intonation in polite requests **Functions**: Ordering food, expressing preferences, talking about traditions, handling payments.	Learners role-play a meal order in a virtual restaurant, interacting with a waiter and other customers, choosing dishes, and asking for the bill.	Recalling meaningful holiday meals and what made them special.
Module 5 – Saying Goodbye	Anna's trip is coming to an end. She thanks Helen and Tom for their help and friendship. They make plans to meet again.	Hotel Lobby / Airport Departure Gate	**Grammar**: Future forms with going to; adverbs of time (today, tomorrow, soon) **Vocabulary**: Travel and departure; feelings; farewells **Pronunciation**: Sentence rhythm in polite expressions ('Nice to meet you', 'See you soon')	Learners participate in a farewell scene where they exchange thanks and future plans before leaving, using English spontaneously in an emotional, realistic closing scenario.	reflecting on the emotional side of ending a trip (saying goodbye, keeping in touch, plans for future travel).

			Functions: Expressing gratitude, making plans, saying goodbye.		

3.4. Module 1: Meeting at the Airport Café (Teaching Walkthrough)

To show how the modules of *English for Travelling* can be developed in practice, a full walkthrough of "Module 1 – Meeting at the Airport Café" is described below, offering a concrete illustration of how the unit's learning principles may be applied in a classroom setting. The design draws on my experience as a CELTA-qualified teacher (*Certificate in English Language Teaching to Adults*), a title awarded after completing a practical training course that combines supervised teaching practice with guidance on planning and conducting lessons through student-centred, communication-focused methods consistent with the *Cambridge Assessment of English* framework. In addition, the organisation of the activities follows a glottogeragogical orientation, ensuring that tasks remain manageable for senior beginners, while selected gamification strategies are included to make the learning experience more engaging and easier to approach.

3.4.1. Context & Episode

"At the Airport Café" – Narrative Summary

Anna has just arrived at London Heathrow. She is waiting in line at the airport café to order something to drink. In front of her stands a man named Tom, who is ordering a cappuccino. When the barista asks for his name, he mishears it and thinks Tom said "Dom". Tom gently repeats it. A few minutes later, when the drink is ready, the barista calls out "Matthew". Tom smiles and replies, "No, I'm Tom." The barista apologises again and hands him his cappuccino.

Meanwhile, Anna is listening carefully to the exchange, trying to pick up useful expressions she can use when it is her turn. When she steps forward, she orders a tea. The barista mishears her name as well ("Emma?") and Anna corrects him, "No, Anna". The barista smiles and repeats, "Anna. OK".

Once she receives her drink, Anna looks for a place to sit and notices an empty table near a woman who smiles at her. The woman's name is Helen, and she has had the very same issue with the barista earlier that morning. "Same problem!" Helen says as Anna sits down. "Oh, really?" Anna replies, smiling. They introduce themselves: "I'm Anna" "I'm Helen" "Nice to meet you" "Nice to meet you, too". Their brief chat marks the beginning of a new friendship and Anna's first little success speaking English during her holiday in London.

3.4.2. Lead-in: Lesson Warm-up

Module 1 opens with a short lead-in activity designed to introduce learners to the narrative context, activate their background knowledge and spark their curiosity.

The teacher shows an image[2] of Anna standing in line at the airport café, waiting to order a drink, while the man named Tom is ahead of her at the counter. This visual support aims to immediately anchor the situation, allowing senior beginners to grasp the setting before engaging with language content.

Students work in pairs and answer two simple questions: *Where is Anna?* and *How does she feel? (happy, tired, nervous)*. The task encourages them to make initial predictions about the scene, drawing on familiar travel experiences and on the emotional cues provided in the picture.

[2] All images included in this teaching unit have been created with the support of AI tools. They are used here simply as provisional illustrations, to make the presentation clearer and to give a general impression of how the teaching materials could be developed in future research.

Task 1

1. Look at the picture below. Talk to your partner. Ask and answer the questions:

- Where is Anna?
- How is she? (Happy, tired, nervous?)



After learners have shared their guesses, the teacher briefly explains the context in very simple English or in students' L1 (Italian) if necessary:

> *"Anna is 64, she has just arrived at Heathrow Airport and is waiting for her turn to order something at the café. This is her first experience in London and of course she feels pretty nervous."*

From a learning perspective, the activity works as a short narrative warm-up and ice-breaker, designed to help learners ease into the lesson and establish an initial link with the material. It also prepares them for the listening task that follows by offering a low-pressure moment of interaction based on very accessible language.

3.4.3. Listening & Speaking:

The next step focuses on listening and speaking around short, everyday exchanges at the café. The activity sequence is designed to help senior beginners recognise and reproduce simple dialogues where characters order a drink, give and confirm a name, and introduce themselves. The teacher begins by briefly recalling the situation established in the narrative summary:

> *"Anna is in the queue at the airport café, listening to a man who is already talking to the barista."*

Step 1 – Pre-listening

Before playing the recording of Dialogues 1-3, students are asked to read and answer the guiding question below, aimed at drawing attention to the central communicative issue in the exchange:

🎧 **Listen to the dialogues:**

In **Dialogues 1-3** there is a misunderstanding between the barista and the customer, can you explain it?

🔊 **Dialogue 1**	🔊 **Dialogue 2**	🔊 **Dialogue 3**
Read and listen.	**Read and listen.**	**Read and listen.**
T: A cappuccino, please. **B: What's your name?** **T: Tom.** **B: Dom?** **T: No, Tom. Not Dom.** **T: Tom. OK.**	**B: Are you Matthew?** **T: No, I'm not. I'm Tom.** **B: Sorry, Tom. Your tea.** **T: Thanks.**	**A: A tea, please.** **B: What's your name?** **A: Anna.** **B: Emma?** **A: No, Anna.** **B: Anna. OK.**

Learners then listen to the three short dialogues, all focused on the barista mishearing the customers' names. After listening, they answer the question individually, then

compare their responses in pairs, and finally check the answer together during the teacher-led feedback.

Step 2 – Listening

The lesson then moves to Dialogue 4, which introduces Helen. Before playing the recording, the teacher shows an image of Anna seated at a table next to another woman who is smiling at her. Learners are invited to discuss in pairs who this woman might be and why she is smiling.

🎧 **Before listening to Dialogue 4**

Talk to your partner. Answer the questions below:

- In your opinion, who is this woman?
- Why is she smiling at Anna?



After discussing their ideas, students read and listen to a short exchange in which the situation becomes clear: Helen has had the same misunderstanding with the barista earlier that morning and recognises what has just happened to Anna. She says *Same problem with the barista!* and this brief remark opens the way for the two women to

introduce themselves using simple formulaic expressions such as *I'm Anna*, *I'm Helen*, and *Nice to meet you.* Learners then check their answers together before the teacher confirms the main points with the whole class.

Step 3 – Post-listening

Once the activities related to all four dialogues are completed, the sequence moves into a short phase of controlled oral practice designed to reinforce pronunciation, rhythm and confidence. Learners first repeat the dialogues chorally under the teacher's guidance and then rehearse them in pairs. Particular attention is given to the rhythm and intonation of high-frequency forms such as *I'm*, *You're*, and *No, I'm not*. Drilling is especially important at beginner and elementary level, as learners often tend to avoid contractions when reading or speaking, falling back on the full forms (*I am* / *You are*). Therefore, introducing contractions early on helps them develop more natural pronunciation.

After controlled practice, students carry out a semi-controlled activity in pairs. They recreate the dialogues by keeping the original structure but replacing the names of characters and a few details with their own. This small degree of personalisation makes the task more relevant without increasing cognitive load, and helps learners build confidence, using expressions more independently.

Design rationale

The listening-speaking section has been planned to meet the needs of senior beginners. Introducing short dialogues, clear visual prompts, and predictable turn-taking helps keep cognitive effort low, an essential condition in a glottogeragogical perspective, since learners benefit from accessible input presented in small, manageable steps. Brief moments of clarification in Italian further support comprehension, especially at this early stage of the course.

The progression from guided noticing to controlled practice and then to semi-controlled pair work is consistent with student-centred approaches to learning. Senior beginners first observe the model, then rehearse it with the teacher's support, and finally adapt it in personal ways while still benefiting from partial scaffolding, which remains necessary given their linguistic level.

3.4.4. Grammar: Introducing Verb be (singular): I / You

The grammar section in Module 1 focuses on the singular forms of the verb *be* (*I am* / *You are*). The activity below has been designed to introduce learners to the topic by placing the target language within a simple and familiar context. In this way, senior beginners can observe the use of *I am* and *You are* in a concrete situation before moving on to an explicit explanation of the rule. This keeps the focus on communication consistent with student-centred principles that prioritise clarity and accessibility.

Step 1 – Language Presentation via Task

Look at picture below. Fill-in the gap: - What word is missing?	**Look at picture below. Fill-in the gap:** - What word is missing?
	

The teacher shows two pictures: one portraying Anna alone and another showing her speaking with Helen. In each image, a speech bubble contains a gap that learners have

to fill in with the appropriate subject pronoun. The activity draws on a typical format adopted in English as a Foreign Language (EFL) teaching known as *Presenting Language via Task*, where new rules are introduced through a simple assignment rather than relying on theoretical explanation. In this framework, the teacher elicits the correct pronoun, and students in turn rely on their intuition to provide the right answer.

Therefore, presenting the target language through visual cues featuring two familiar characters makes the transition to the grammatical stage smoother and easier to grasp. For senior beginners, this process becomes even more intuitive when paired with compensatory gestures, such as touching their chest for *I'm* or pointing to an imagined interlocutor (or their partner) for *You're*. These movements aim to strengthen associative memory and allow learners to internalise the rule without using metalanguage.

The teacher then steps in to introduce the rule, avoiding both lecturing and technical jargon. The following example shows how the rule might be conveyed through a more theoretical and abstract formulation:

> *"'I' is the first-person singular subject pronoun and it goes with 'am', which can contract to ''m', as in 'I'm'. 'You' is the second-person singular subject pronoun and it occurs with the verb 'are', which contracts to ''re', as in 'You're'".*

A student-centred perspective, however, places emphasis on meaning rather than on formal labels. For this reason, a clearer and more accessible explanation would be:

> *"When I talk about myself, I say I'm; when I talk to you, I say You're".*

Put in these terms, the rule becomes easier to recognise and remember.

Step 2 – Language Analysis

The lesson then moves into language analysis, the step in which the grammatical rule is unpacked in detail. At this stage, the teacher focuses on the form, meaning and pronunciation of *I am / I'm* and *You are / You're*, helping learners see their differences and how to use them appropriately.

Form

To teach the form, the language instructor shows a gapped table that the whole class has to complete together. Learners are asked to add the missing full versions of the verb *be*, drawing on the examples already displayed in the other columns. The goal is to elicit each answer from the students, who are encouraged to recognise the link between full and contracted forms.

Complete the table:

Full form	Contraction	Example
I _____	I'm	I'm Anna.
You _____	You're	You're Helen.
I _____ not	I'm not	I'm not Dom.
You _____ not	You aren't / You're not	You aren't Matthew.

Meaning

In a grammar lesson, the focus on meaning helps learners understand the communicative purpose of the rule and the specific contexts in which it is typically used. At this point, the teacher avoids giving explanations immediately and works with Concept-Checking Questions (CCQs) to make sure that learners have grasped the intended sense of the rule before moving on. These targeted prompts (delivered through yes/no questions) guide students towards the interpretation the teacher wants them to reach.

In this lesson, CCQs are applied directly to the sentences shown in the table. The teacher points to each example and asks simple questions that help learners work out the meaning. The teacher starts with *"I'm Anna"*. While pointing at the row, s/he asks:

- *Is Anna talking about herself or another person?"*
- When the students answer *Herself*, the teacher reinforces the meaning: *Right. We use I'm to talk about ourselves.*

The teacher then moves to "*You're Helen"* and asks:

- *Is Anna talking about herself?*
- The students need to reply: *No, she's talking to someone else.*
- The teacher concludes: *Good. "You're" is used when we speak to another person.*

For *"I'm not Dom"*, the teacher checks understanding asking:

- *Is my name Dom?*
- The students need to reply "*No*".
- *So, am I correcting something that isn't true?*
- The teacher needs to elicit "*Yes*" from the students.
- The teacher restates the meaning: *Exactly. "I'm not" means that something about me is not true.*

Pronunciation

Pronunciation work is approached gradually, with clear modelling and short, repeated drills. The teacher returns to the items shown in the table and help students practise the contracted forms one at a time. The students are trained to hear and reproduce the difference between full and shortened versions.

The teacher begins with *I'm*, saying it slowly and naturally while making a small gesture towards the chest. The class repeats the form together (choral drilling). The

same procedure follows for *You're*, this time accompanied by a gesture directed towards a partner.

Negative forms are practised in the same way. For *I'm not*, the teacher models the rhythm of the phrase and encourages learners to keep the contraction and the negative particle together as a single unit. With *You aren't*, the teacher slows the phrase down and highlights the linking between *you* and *aren't*, helping students avoid inserting an unintended pause between the two words.

Throughout this phase, the teacher encourages senior learners to prefer contractions over full forms, supporting them in developing a more natural and confident way of speaking.

Step 3 – Controlled Practice

Controlled practice allows learners to work with the rule in a guided way, carrying out an activity that offers them very limited choice, since they are expected to apply the target language accurately rather than creatively. In this phase, the teacher asks the students to rewrite a set of sentences using the contracted forms *I'm*, *You're*, *I'm not* and *You aren't*.

Re-write the sentences with contractions

1. I am Tom. → I'm Tom.
2. You are not in London. → You aren't.
3. I am not Helen. → _____
4. You are not at the train station. → _____
5. I am Rob. → _____
6. You are at Heathrow Airport. → _____
7. I am at the Heathrow Café. → _____
8. You are not Dom. → _____

Learners work individually at first so they can concentrate on applying the rule without pressure. Once they have completed the task, they compare their answers in

pairs to correct mistakes if made. The teacher then intervenes to check the answers with the whole group, providing feedback.

Step 4 – Semi-controlled Practice

Semi-controlled practice allows learners to use the target language with a degree of flexibility while still following a pattern that guides the activity. Unlike controlled tasks, this phase allows students to adapt their exchanges, for example, by changing names, places or small details. Yet, the language they produce remains closely linked to the rule already taught.

In this activity, the teacher asks learners to walk around the classroom, introduce themselves and ask simple questions to their classmates. A short model is provided to show the type of exchange expected:

A: *Hi, I'm Anna.*
B: *Hello! I'm Tom.*
A: *Are you from Italy?*
B: *No, I'm not. I'm from the UK.*

Students then create their own personalised dialogues, changing names, places or roles as they move from one classmate to another. The teacher monitors discreetly during the mingling phase, noting recurring errors or successful uses of the rule. These examples are then brought to the board for delayed error correction.

To support variation and reduce cognitive load, the teacher may prepare simple visual aids such as name tags or pictures of cities (e.g., Rome, London, Paris), which students can use to expand their exchanges without added linguistic pressure.

3.4.5. Vocabulary (Numbers 0-20)

In the vocabulary section, learners work with numbers from 0 to 20. The range is deliberately limited to facilitate retention and allow beginners to master them as the lesson progresses. Rather than teaching the numbers in an abstract way or through simple L1-L2 comparisons, the section introduces this set through gamified tasks that embed their use in meaningful contexts. These activities give learners repeated opportunities to recall and pronounce the items and, crucially, to adapt them to different situations, particularly when role-playing conversations involving prices. The walkthrough that follows illustrates how these tasks are incorporated into the lesson.

Step 1 – Language Presentation and Clarification via Listening Task

The lesson begins with a short listening activity intended to introduce the numbers. The teacher plays a recording containing the full sequence from 0 to 20. Learners listen once, and then repeat each item chorally under the teacher's guidance. Particular attention is paid to sounds that are often challenging at beginner level, especially the "TH-sound" (*/θ/*) as in *three* and *thirteen*, which is completely missing in Italian language. The teacher explains how */θ/* is articulated, showing that the tip of the tongue needs to rest lightly between the upper and lower front teeth while a small stream of air is released. The students are then encouraged to pronounce the sound in the right way. Visual prompts, such as number cards, might also be used during the listening task to support memorisation and make the input easier to retain.

The next step focuses on consolidating learners' understanding of the pronunciation patterns of the numbers, particularly in terms of rhythm, syllable stress and intonation. The teacher highlights the numbers that may require closer attention and writes them on the board to illustrate the contrast between single- and double-syllable words. For example, *three*, *thirteen* and *fourteen* are practised through short, rhythmic drills carried out in chorus. To make the stressed syllable immediately clear,

the teacher claps once on the stressed beat while modelling each number. Learners repeat the sequence several times adjusting their rhythm and intonation as needed.

Step 2 – A Sequence of Gamified Activities to practise the numbers

Rhythm Game (To Practise Number Recall)

Work in pairs.

1. Sit facing your partner.

2. Student A says a number between 0 and 20 with rising intonation.
   Example: *One?*

3. Student B immediately says the next number with falling intonation.
   Example: *Two!*

4. Continue alternating turns.
   Example:
   A: *Eleven?* B: *Twelve*!
   A: *Nineteen?*" B: *Twenty!*

5. Change roles. The other student starts first.

After the language clarification stage, the lesson moves into a set of gamified activities that allow learners to work with the numbers in an engaging and interactive way. The sequence opens with a rhythm game in which pairs alternate saying consecutive numbers with contrasting intonation. Student A says a number with a rising pitch, and Student B responds by uttering the number that comes immediately after it, this time with a falling pitch. This quick exchange strengthens learners' recall of the 0-20 sequence, as they must retrieve the next number from different points within the range rather than repeating the list mechanically.

Bingo Game (To Strengthen Number recognition and Recall)

A classroom version of bingo is then introduced to reinforce vocabulary recall. Each student receives a small grid containing a selection of numbers from 0 to 20 arranged in a jumbled order. The teacher draws a number from this range and says it clearly to the class. The students look for that number on their grid and circle it. The first student who manages to complete a full line calls out "*Bingo!*".

Number Bingo: Play in class.

1. Listen to the numbers your teacher says.
2. Find each number on your grid.
3. Circle the number.
4. When you cover the complete line, say *Bingo!*
5. Check your numbers with the class.

Your Bingo Grid:

0	3	8	11	16
1	5	9	12	17
2	6	10	13	18
4	7	14	15	20

The task requires learners to connect the number they hear with its written form, reinforcing listening discrimination and memorisation. The teacher monitors the activity to ensure that the instructions are clear, repeating the numbers slowly if needed.

The activity is played twice and two little incentives are offered to give learners a concrete goal that serves to foster their engagement and motivation. In the first round, the student who completes a full line receives a "Caffè Token", a symbolic card that can be redeemed at the end of the lesson for a real coffee. In the second round, the winner receives a "Priority Pass", which allows them to choose, for example, their partner for the next task or decide which dialogue to practise first.

Role-play: "Ordering at the Café" (Using Numbers to Discuss Prices)

The final activity in this section consists of a short role-play that gives learners the chance to use numbers in a dialogue that recreates a typical interaction in a café. Working with a café menu, students select items, identify their prices, and calculate the total amount of their order. In this way, numbers are practised with a clear and realistic purpose.

Step 1 – Pre-teaching Useful Language

Up to this point in the vocabulary lesson, learners have worked with numbers in isolation, without yet seeing how they are used to talk about prices. This preliminary step introduces the conventions needed to express amounts in English, preparing students for the dialogue they are about to simulate.

The teacher writes an example on the board, such as *£2.15*, and reads it aloud (*two pounds fifteen*). The explanation clarifies that £ refers to pounds, the British currency, that the dot is not read aloud, and that a price can be expressed in two ways: *two pounds fifteen* or simply *two fifteen*. Students repeat the examples chorally to internalise the pattern.

Step 2 – Teacher Modelling

The teacher then models a short dialogue that could naturally take place in a café, showing how numbers are used when talking about prices.

Customer: *Two cappuccinos and one cake, please.*
Barista: *That's £7.55, please.*
Customer: *Here you are.*
Barista: *Thank you.*

A brief focus then follows on the expression *Here you are*. The teacher simulates the gesture of handing something to a person and repeats the phrase. Students imitate the

gesture and repeat it. To confirm meaning, the teacher asks simple CCQs (e.g., *Do we say "Here you are" when we give something?*), ensuring that learners understand when and how the expression is used. The students then read and practise the model dialogue in pairs.

Step 3 – Pair Simulation

Role Play "Ordering at the Café" **Work with your partner:** 1. Look at the café menu. You can see drinks, snacks, and desserts with prices in pounds. 2. Student A is the customer. Student B is the barista. 3. Choose more than one item, calculate the total amount, and act out the conversation. 4. Change roles and play again.	

Students work in pairs with a café menu containing a selection of drinks, snacks and desserts. Student A plays the customer and Student B the barista. They rehearse a café dialogue following the model provided by the teacher and adapt it to the items and prices shown on the menu. Once they complete the task, they switch roles and repeat it with new combinations

The teacher monitors the pairs unobtrusively, offering help only when needed. A brief feedback stage closes the activity: the teacher notes down common mistakes on the board and elicits the correct answers from the class.

3.4.6. Pronunciation Focus: /θ/, /ð/, /h/

This section focuses on three English sounds that tend to be challenging for Italian speakers: /θ/ (unvoiced *th*), /ð/ (voiced *th*), and /h/ (aspirated *h*). The activities draw on situational prompts taken from the Module 1 storyline, ensuring that pronunciation work remains aligned with the sequence developed so far. The sound /θ/ has already been covered in the vocabulary stage, when the teacher models the pronunciation of *three* and *thirteen*. However, it is revisited here before moving on to /ð/, so that learners can grasp the difference between the two sounds in a simple and progressive way.

Step 1 – Awareness and Modelling (Pronouncing single words)

To begin, the teacher writes the words *three*, *this* and *Helen* on the board and drills them, with students repeating in chorus. To explain how to articulate each sound, as for /θ/ and /ð/, the teacher shows how the tip of the tongue is placed between the upper and lower front teeth, and clarifies the difference between the two sounds by pointing out whether the vocal cords vibrate or remain still. The sound /h/ is then introduced through a simple, concrete image suggesting the action of breathing softly on the lenses of a pair of glasses before cleaning them.

Step 2 – Practicing sounds in short phrases

The following activity introduces a slightly higher level of difficulty, as learners pass from practising the sounds in single words to short phrases (e.g., "*Hi, Helen!*", "*Thanks, Helen!*" and "*This Thursday!*"). In this step the teacher models each chunk and the class repeats in a steady rhythm.

Step 3 – Practice in Context

The final activity of this section includes four mini-dialogues that allow students to practise the sounds within contextualised situations. Learners first repeat the lines chorally to check accuracy and then rehearse them in pairs.

Work in pairs. Read and practise the dialogues:

💬 **Situation 1 – Greeting someone** A: Hi, I'm Helen. B: Hello, Helen!	💬 **Situation 2 – Ordering drinks** A: Three teas, please. B: Thank you!
💬 **Situation 3 – Introducing someone** A: This is Tom. B: Oh, hi Tom!	💬 **Situation 4 – Paying** A: Three pounds thirteen, please. B: Oh, that's fine, thank you.

3.4.7. Speaking

The speaking section is organised as a sequence of tasks designed to build students' confidence in managing basic social interactions, which imply greeting somebody, introducing themselves, and arranging a future meeting.

Step 1 – Setting the Scene

Before starting the speaking activities, the teacher briefly returns to the point where the episode paused. S/he shows the students a picture of Anna and Helen sitting at Heathrow Café and reminds them of what has just happened:

> *After the misunderstanding with the barista, Anna gets her tea and sits down. Helen, who had the same problem earlier, smiles and says 'Same problem with my name!' Anna laughs and answers 'Oh, really?'*

Look at the picture below:



This short recap helps learners reconnect with the storyline and offers a clear context for practising expressions that are typically used when meeting someone for the first time in a casual setting like a café.

Step 2 – Modelling a conversation through a Reading-Listening Task

The teacher then frames the purpose of the task:

> *"Now Anna and Helen start a friendly conversation. They introduce themselves and talk about when they might meet again."*

At this stage, learners work with two short dialogues taken from the café scene. Before playing the recording, the teacher hands out the script so that students can read while listening. This procedure is particularly helpful for senior beginners, as the opportunity to follow the audio while reading makes the exchange easier to process. It also prevents a potential misunderstanding linked to the stage direction included in Dialogue 1, which notes that Helen points at the barista when she says *"Same problem with my name!"*. Since this gesture is not audible in the recording, the script serves to

remove any potential ambiguity occurring in the listening task. The teacher plays the dialogues twice. Learners first listen and follow the script, then repeat the lines chorally and in pairs.

🎧 **Listen, read and repeat the short conversations**

Dialogue 1 – Introducing each other	**Dialogue 2 – Saying goodbye**
Helen: Hello! **Anna:** Oh, Hi! **Helen:** Same problem with my name! *(Helen points at the barista. Anna doesn't understand at first, but then she does.)* **Anna:** Oh, really? **Helen:** Yes! What's your name? **Anna:** My name is Anna. What's your name? **Helen:** I'm Helen. Nice to meet you. **Anna:** Nice to meet you, too.	**Anna:** Goodbye, Helen. See you on Friday. **Helen:** OK. Bye!

Step 3 – Language Clarification: Greetings and Farewell

After rehearsing the two dialogues, the teacher moves to a clarification stage to highlight when the expressions used in the conversations typically occur. To keep this phase straightforward, the teacher writes two columns on the board – one for meeting someone and one for leaving – and adds the expressions found in the dialogues.

MEETING	**LEAVING**
Hello! / Hi!	Goodbye / Bye
What's your name?	See you on Monday / tomorrow
I'm Anna.	Have a nice day!
Nice to meet you.	See you soon!

The class is then guided to notice the difference through a set of simple CCQs (e.g., *Do we say Hello at the beginning or at the end of a conversation?* or *Do we use*

Goodbye when we meet or when we leave?). The goal is to help students figure out the communicative function of each expression.

Step 4 – Short vocabulary focus: Days of the Week

The teacher introduces a short vocabulary focus on the days of the week, which is essential for the speaking activity the students are about to carry out.

Put the days of the week in the correct order:

Monday Friday Tuesday Sunday Thursday Wednesday Saturday

S/he writes them on the board in random order, and learners work together to rearrange them chronologically. As they collaborate to identify the correct sequence, students naturally work out the meaning of each item. By placing the days in order, they establish a connection with their L1, thus figuring out that Monday corresponds to *lunedì*, Tuesday to *martedì*, and so on.

Once the order is established, the teacher models each day and the class repeats the sequence chorally, first slowly and then at a natural rhythm, paying attention to stress patterns (e.g., *ˈMonday*, *ˈTuesday*, *ˈFriday*). To anchor the vocabulary in a communicative frame, the pattern *See you on + day* is introduced through contextualised examples, such as *See you on Monday*, which students repeat together.

Step 5 – Speaking Practice

The final stage of this section gives learners the opportunity to rehearse the expressions they have learnt in short conversations. A simple visual scheme is provided as a form of scaffolding to guide senior beginners in their interactions, ensuring that they do not feel lost during the task. This scheme can be projected or given in hard copy.

Students then stand up and move around the classroom, carrying out short dialogues with their peers. They introduce themselves, ask and answer basic questions,

and personalise their conversations by changing names and days of the week. This repeated practice helps them internalise the sequence while keeping the interaction light and manageable.

Walk around the class. Use the scheme below to talk to your partners.

Hi, I'm … Are you …?

↓

(Yes, I am.) (No, I'm not.)

Nice to meet you. What's your name?

(I'm …)

Nice to meet you

See you on … **See you, bye.**

As always, the teacher monitors the activity discreetly, noting recurring errors or successful uses of the target forms. Feedback is conducted afterwards through brief delayed correction, praising the students for using the target forms, structures, and phrases accurately.

3.5. The VR Serious Game Prototype: Purpose and Design

The teaching unit *English for Travelling* is complemented by a 3D Serious Game (SG) prototype in Virtual Reality (VR), conceived as an extension of the classroom work that would ideally take place before every simulation. The game offers learners the opportunity to rehearse language in a more spontaneous, exploratory way. It is not conceived as a standalone tool, but as an integrated component that extends the unit's content into an immersive environment where senior beginners deal with interactive challenges designed to test and consolidate linguistic and communicative skills acquired in each module.

As noted earlier, the prototype described here remains at the planning stage, as its practical development was not part of the project's objectives. Even so, the draft proposed in this chapter has been developed in a way that would allow for future implementation, should the research be taken further.

The design phase relied on Artificial Intelligence (AI) to support the development of the prototype's graphical components. More specifically, AI-assisted image generation was employed to create illustrative assets and mock-ups that helped outline the layout of the virtual settings, interfaces, objects, and characters before any full-scale implementation. In this respect, AI can serve as a useful resource for the teacher-researcher, offering an early, concrete preview of how a SG could be crafted, helping to anticipate design choices and to reflect on how the overall gameplay experience may be adapted to the abilities and needs of the intended end users. The inclusion of AI at this stage reflects the ethos of the present study, which is conducted within the context of innovative doctoral programmes and therefore acknowledges the importance of valuing emerging technologies as part of the research process, while maintaining methodological rigour.

The prototype focuses on the language covered in Module 1 and situates players in a realistic airport setting referred to as "Heathrow". However, this is not an exact replica of the London airport. The name has been chosen to simply enhance the perceived authenticity of the simulation, keeping the design fictional but plausible.

In this virtual space, learners would use a headset and two controllers to move around, observe details, and interact with objects and characters. In this way, they can revisit and strengthen classroom content in a setting that feels immersive and easy to relate to. In line with the rationale of SGs, this experience offers a safe space to try out English without social pressure or fear of making mistakes, providing a low-anxiety environment in which learners can rehearse language that could be useful in real travel situations.

A detailed walkthrough of the SG for Module 1 is offered below, specifying the equipment needed and describing how the level unfolds step by step, from the opening scene to the final task.

3.5.1. Initial Interface and Basic Controls

What follows is a conceptual walkthrough based on the current design of the game prototype. Before introducing Level 1, it is worth clarifying which type of equipment is needed. The simulation requires a headset and two hand controllers. Once the headset is on, the player is asked to enter their name. This step is necessary because some micro-interactions during the gameplay are personalised based on the name provided at the beginning. The goal is to make tasks feel more natural and directly connected to the player's presence in the simulation. The name can be added in two ways. The first attempt relies on voice input (the user says their name aloud). If this method does not produce a reliable match, a floating virtual keyboard appears, so that the user enters their name by selecting each letter with the controller and confirms it by pressing "OK". The name is saved and remains active throughout the session.

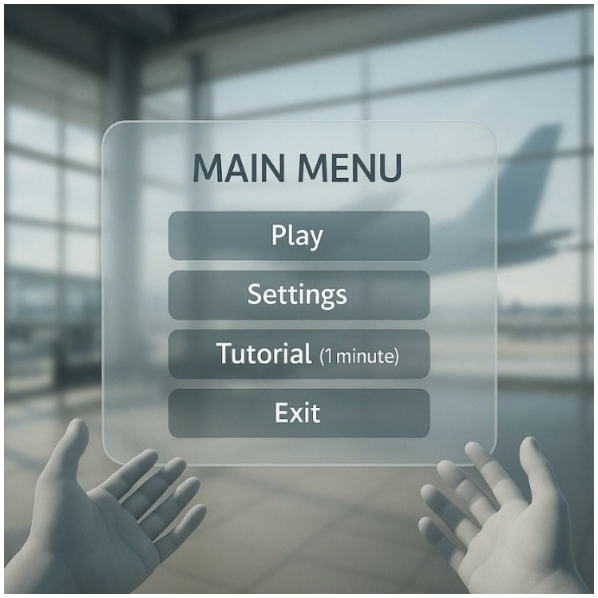


Figure 1. Main Menu

After this step, the game's initial interface (Figure 1) appears in a layout designed to be user-friendly. The player can either start the session straight away or decide to adjust a few basic settings first. The choice to use large fonts, clear labels and well-spaced buttons stems from an attempt to convey the idea that the game's technology is fully within the player's reach from the very beginning.

Interaction within the simulation takes place with two controllers, one for each hand. The player uses a small trigger on each controller, together with natural arm and hand movements, to pick up, grab, release, manipulate or point to objects. This helps create a more realistic experience, as if they were using their own hands inside the environment. To further enhance immersion, the controllers do not appear in their real shape during gameplay but are visualised as two digital hands. Pressing the *Play* button launches the simulation. *Exit* conversely allows the player to pause or quit the game at any moment.

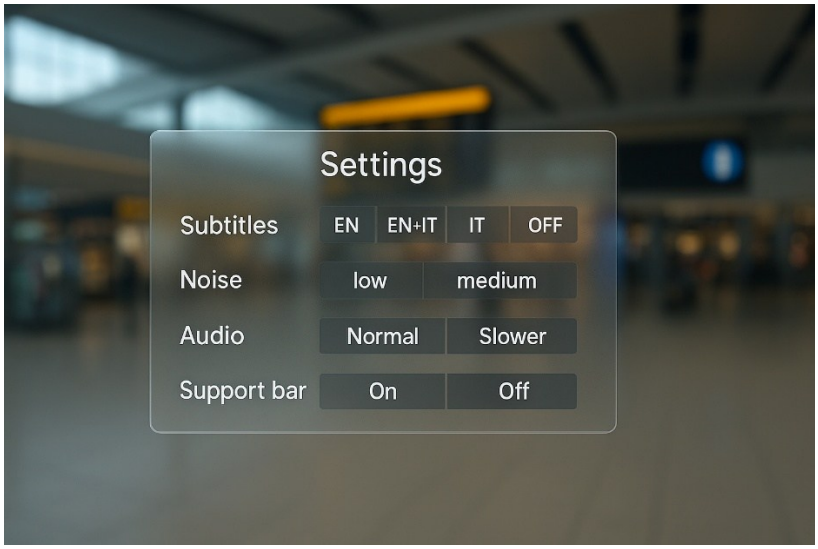


Figure 2. Settings

The *Settings* area (Figure 2) is designed to adapt the simulation to the user's perceptual profile. These adjustments do not affect the structure or content of the game but modulate certain conditions to make the interaction more manageable. Subtitles

appear in the selected language combination (English, Italian or both), with the option to turn them off entirely. Ambient noise can be reduced according to the chosen level, and the speech rate can be slowed down to suit the user's preferred rhythm. The player may also decide whether to activate the support bar before starting the simulation. However, should they realise they need assistance during gameplay, they could enable it at any moment.



Figure 3. Pointing to objects (micro-tutorial)



Figure 4. Voice test (micro-tutorial)

Before accessing the simulation, a short micro-tutorial (Figures 3 and 4) is available to help players feel at ease with the controls. The sequence takes place in a neutral indoor lounge that bears no connection with the SG's setting. Keeping this preparatory space separate avoids giving away any early clue about what they will see later, so that their first view of the airport environment feels genuinely new. When players finally enter the scene, they would be likely to feel a natural sense of curiosity that would encourage them to look around.

During this stage, the player is introduced to a set of simple actions. In particular, they learn to:

- move using the teleportation platforms placed in the area;

- point to an object;
- pick up and release an item by holding and releasing the controller trigger;
- say two simple expressions (e.g., *Hello*; *Thank you*) to confirm that the microphone is active.

At this point, the support bar also occurs at the bottom of the user's view, so the player can select each button by pointing the digital hand towards it:

- *Repeat* replays the utterance just heard;
- *Slower* lets the player listen again at a slower pace;
- *Help* offers short prompts or language models to guide the player when the next action is not immediately clear;
- The *Subtitles* option turns the on-screen text on or off according to the initial settings.

3.5.2. Game Mechanics

Defining game mechanics is a crucial step in videogame development, as they form the backbone of the entire experience. In this prototype, they have been designed to be straightforward and easy to anticipate, so that senior learners can focus on the communicative tasks without feeling overwhelmed by the technological side of the simulation.

Movement within the virtual space relies on a point-and-teleport approach. The player indicates the desired spot with the controller, presses the trigger and is then transported to the corresponding platform through a short visual jump. This type of locomotion is generally more comfortable and helps reduce the risk of motion sickness, which makes it the most suitable option for the development of the prototype. For this reason, navigation is planned to rely exclusively on this method.

Interaction with the virtual environment follows one clear principle: every action begins by pointing at the target with the controller and pressing the trigger. A short

press works like a simple click, while holding the trigger closes the digital hand and allows the player to pick up or keep hold of an item until the button is released.

To keep the experience motivating without creating pressure, the game includes a scoring system with decreasing rewards: Three points (+3) are assigned when an action is completed at the first attempt, two (+2) at the second, and one (+1) when the player relies several times on the support options (repeat, slower, subtitles or help). The aim is not to judge performance, but to gently encourage players to do their best as they move through the various steps of the level.

A four-step progress indicator is also visible at the top of the player's view. It serves to mark the internal sequence of the module (Step 1, Step 2, Step 3, Step 4) and provide a discreet reference point that helps the player understand where they are within the flow of the simulation.

3.6. "At the Airport Café" – Gameplay Walkthrough

The following section presents a detailed walkthrough of the SG prototype, describing how the level unfolds from beginning to end. Each step illustrates the player's progression through the virtual environment, highlighting the communicative tasks, interactive dynamics, and design choices that characterise the experience.

3.6.1. Step 1 – Walking around Heathrow Airport

The simulation opens inside Heathrow Airport. The player finds themselves in a bright, open area with duty-free shop windows, product displays, scattered seating and several suspended digital screens showing departures and arrivals. As they start looking around, one screen naturally catches the eye, as it shows a map of the airport's services, which also indicates how to get to "Heathrow Café". Since no explicit task has been given yet, it is expected that the player may want to explore the area randomly, soon realising that the environment is not merely scenic but fully interactive.

At some point, a small on-screen prompt appears at the bottom of the view, setting the first goal (Figure 5). The player scans the virtual space until they locate the information panel showing the direction to Heathrow Café.

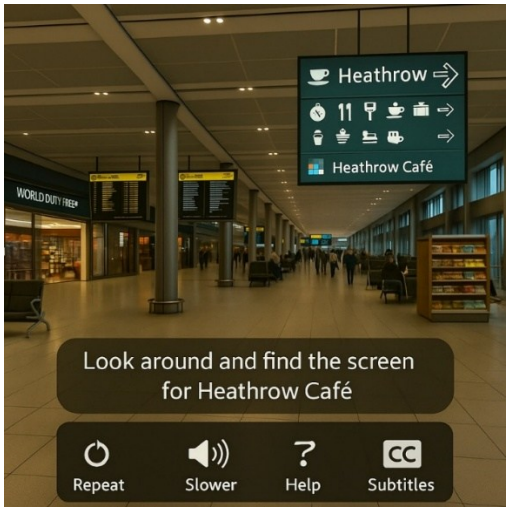


Figure 5. First Scene. Walking around Heathrow

Once the player gets close enough to the screen, a notification sound is heard in the background.

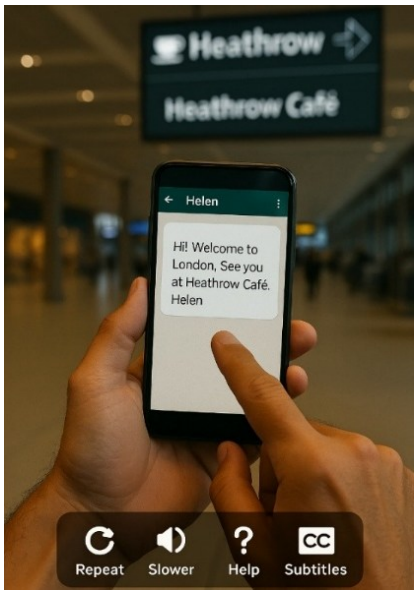


Figure 6. Message from Helen

Hence, a small prompt appears, inviting the player to take their phone out of their pocket. When they look down, they can see the top edge of a virtual smartphone slightly sticking out from the right pocket.

Using the digital hand, they grab it and pull it out. As soon as the phone is lifted, the screen turns on and displays a single WhatsApp icon with a red badge indicating a new message. When the player taps the icon, a message from a woman called Helen appears (Figure 6). Apparently, Helen has been waiting at the café. The game does not provide any additional information about her. The player only knows that the coffee bar is their next destination.

It is worth noting that the choice to use a WhatsApp message to move the scene forward aims to keep the moment coherent from a diegetic point of view. The information does not appear as a system alert, but through an object the player would realistically have with them. The simple act of taking the phone out of the pocket strengthens the connection between the real and the simulated world.

3.6.2. Step 2 – Ordering at the Café

Context

The player enters the café. Soft ambient sounds can be heard in the background, such as clinking cups, footsteps, and the quiet murmur of customers sitting at the tables. The atmosphere is calm and relaxed. As the player moves towards the counter, the barista notices them only when they reach a natural conversational distance. Behind the counter, a small illuminated display shows the pictures of the items available for order (e.g., tea, coffee, water, sandwich, cake, fruit juice, cookies). Once the player is standing in front of the counter, the barista is ready to welcome them.

Simulation

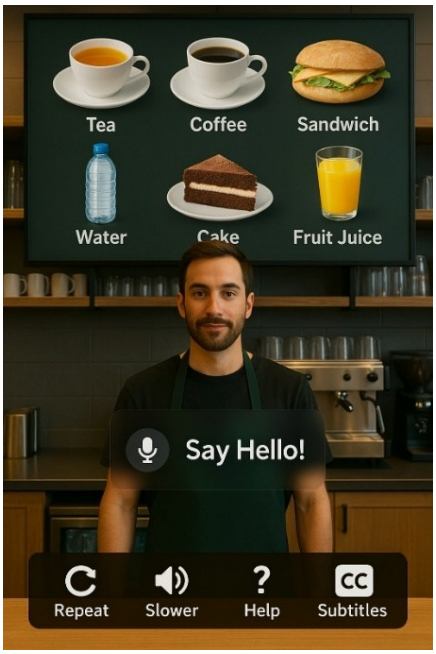


Figure 7. Ordering at the counter

The barista greets the player with a simple *Hello*. Therefore, the player is supposed to answer back with *Hello* or *Hi* (Figure 7). Right after this exchange, an on-screen prompt appears giving the next instruction: *Order something.* At this point, a small microphone icon shows that the system is now listening.

The player can then ask for one of the items displayed behind the counter using short expressions already practised in the unit (e.g., *A tea, please.* / *A coffee, please.*). When the utterance is recognised, the selected item lights up on the display and the barista gives a short confirmation such as *A tea. Ok.* If the system does not understand the request, a gentle prompt appears — *Sorry? Can you repeat, please?* — and the player simply tries again.

The four support buttons (*Repeat*, *Slower*, *Help*, *Subtitles*) may remain visible throughout the task, ready to be used at any moment. The step ends as soon as the drink has been requested and confirmed.

3.6.3. A small unpredictable situation with the order

Right after the player orders their drink (e.g., tea), the barista introduces a small variation that slightly extends the interaction without increasing its complexity. Three panels appear in front of the counter, each showing a different type of the same item. Every panel displays its name and a small icon to support recognition.

Simulation

The Barista asks *Which tea do you prefer? English Breakfast, Earl Grey, or Green Tea?* The player makes their choice by pointing at one of the three panels (Figure 8). Once a panel is selected, it highlights and the barista gives a short confirmation, such as *Good! What's your name?* The player then answers (*My name is …*).

This brief detour does not alter the communicative pattern introduced in the unit, as the player is not required to produce new language in response to the barista's question. Its purpose is rather to offer a small, realistic choice that implies the introduction of new vocabulary (i.e., the three tea varieties) in a manageable way.

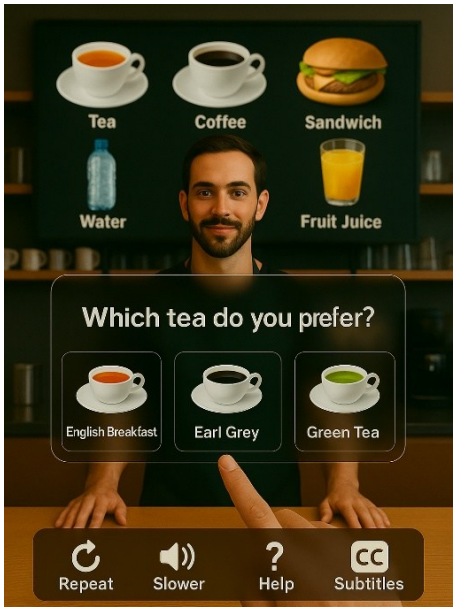


Figure 8. Choosing between three tea selections

The unexpected appearance of the options aims to add an element of surprise, helping the scene feel more authentic without increasing linguistic demands. The visual icons further support comprehension, ensuring that the task remains fully accessible at A1 level. At the end of this step of the simulation, the scoring system assigns +3, +2, or +1 depending on the number of attempts made to complete it, and the progress bar moves on to the next step of the level.

3.6.4. Step 3 – Ordering and Paying

After the player selects their drink on the display, the barista asks which size of the glass they prefer. Two clear labels (SMALL and LARGE) appear on the counter. The player chooses by pointing at the appropriate card, which briefly lights up to confirm the selection. The barista then states the price for the chosen size and adds a small service charge. An on-screen prompt guides the player to identify the correct total. Three panels appear, each showing a possible amount: one correct and two plausible alternatives.

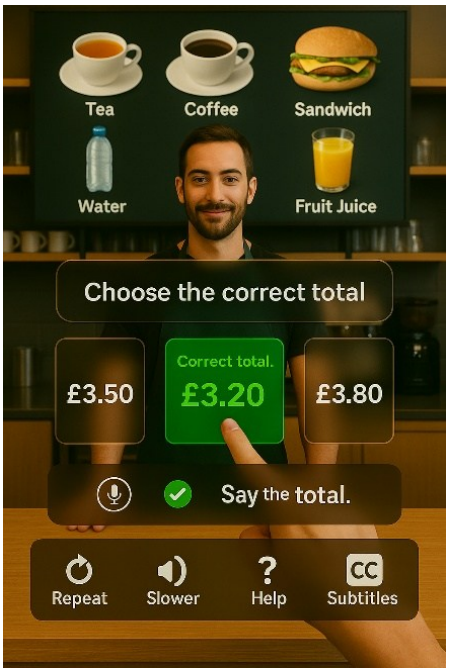


Figure 9. Paying for the order

The player points to the one they believe is right. If the choice is incorrect, the panel flashes red and a gentle message appears. Should the mistake occur again, a small hint is provided. When the correct total is selected, the panel turns green and a microphone icon appears, prompting the player to say the amount aloud (Figure 9). The system accepts two possible options for saying the price (i.e., *three pounds twenty* or *three twenty*). The barista confirms the payment and the step comes to an end.

The scoring system assigns the corresponding points (+3 / +2 / +1) according to how many attempts the player needed to select and say the correct total, and the progress bar moves on to the final stage of the level

3.6.5. Step 4 – Meeting Helen

The player takes the tray with the cup of tea and starts looking for Helen among the tables in the café area.

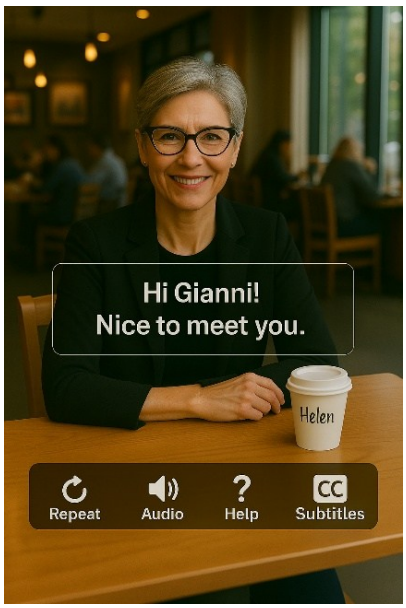


Figure 10. Meeting Hele

She is seated at the far end of the room and can be identified by the large takeaway cup on her table with her name on it. There is also an empty chair next to her, which

is where the player is expected to sit. At this point of the game, it is possible that the player no longer remembers that Helen is waiting, as their attention has been absorbed by the previous tasks. For this reason, the environment is arranged so that all other tables are fully occupied by people or objects. The only free seat is next to Helen. This design choice encourages the player to walk around the area and notice the clue provided by the labelled cup, helping them recall the objective of this step. As the player gets close enough to the table, Helen starts talking (Figure 10).

Simulation

A possible sequence of turns in the simulation is shown below:

Helen: *Hi Gianni! Nice to meet you.*
Player: *Hi*.
Helen: *How are you?*
Player: *I'm fine, thank you. How are yoy?*
Helen: *Doing very well, thanks!*
Helen: *Where are you from?*
Player: *I'm from Italy.*
Player: *Where are you from?*
Helen: *I'm British, I live in London.*

Helen then suggests meeting again. At this point, a set of panels appears in front of the player, each showing a day of the week (Monday to Sunday). The player is invited to select one of them in order to fix a future appointment with Helen. An overlay prompt then appears (*Now tell Helen that you will see her on the selected day*), and the player utters a simple sentence based on the classroom model (e.g., *See you on Wednesday*.). Helen confirms:

Helen: *OK. Wednesday then. Have a nice day.*

Player: *Have a nice day*.

At the end of Level 1, the system assigns a score (+3 / +2 / +1) and the progress indicator fills completely (4/4). The scene then fades out and a central window appears with a summary of the session.

Summary Table

Once the simulation has been completed, a summary table pops up at the centre of the screen (Figure 11). Its purpose is not to evaluate the player, but to offer an overview of their performance during the session. The table displays:

- the overall score obtained throughout the level;
- a step-by-step breakdown showing the points gained in each phase of the interaction (orientation, ordering, payment, and meeting Helen);
- the number of support requests made by the player during the activity;
- a visual indicator confirming that the level has been completed (4/4).

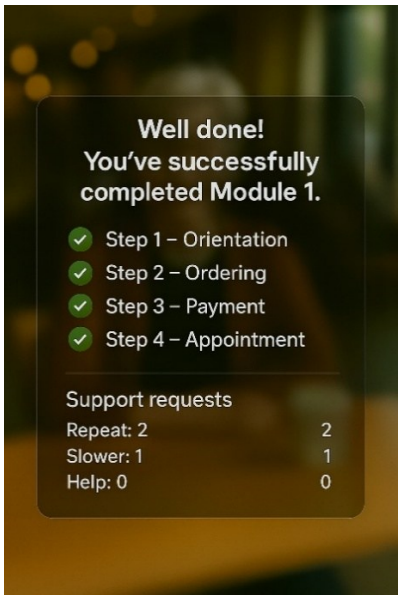


Figure 11. End-of-Session Overview

CONCLUSION AND FUTURE PERSPECTIVES

This research project follows two complementary directions. On the one hand, it aims to reflect on the opportunities and challenges surrounding Second Language Acquisition (SLA) in later life, exploring how this process can be supported through the adoption of game-oriented methodologies. On the other hand, it embraces a more practical dimension that seeks to translate these insights into the design of a teaching unit and a Serious Game (SG) prototype specifically conceived for senior beginner learners of English.

From a theoretical perspective, within the ecosystem of ludic approaches adopted for educational purposes, it has been argued that gamification, Digital Game-Based Learning (DGBL), and SGs can increase engagement through interactive, playful activities which encourage learners to do their best, especially when these are channelled through forms of healthy competition. These alternative educational methods help create a more enjoyable atmosphere, which may reduce the anxiety sometimes associated with more traditional classroom formats. However, as has been pointed out, much of the existing literature focuses primarily on younger learners, whereas older adults receive comparatively less attention in discussions about the educational value of these approaches. Yet the advantages they offer could also be relevant to later-life learning, provided that the technological tools involved are adapted to the digital skills and needs of this age group.

This study has also devoted close attention to the strengths and challenges of language learning in later life, focusing on how the concept of the "third age" is reframed in contemporary sociocultural discourse. No longer viewed through the lens of loss or decline, this stage of life is increasingly recognised as a period of ongoing learning, creativity, and personal fulfilment. Thus, consistent with andragogical and geragogical principles, older adults emerge as active agents of their own educational journey, favouring learning experiences that feel authentic and closely aligned with

their real-life needs. In this view, they prove to be fully capable learners whose performance is often influenced less by cognitive factors than by the weight of ageist assumptions surrounding their perceived inability to acquire new skills or to cope with the technological demands of contemporary society. As discussed, such beliefs, whether internalised or socially reinforced, can limit their confidence and willingness to engage in new learning experiences. Recognising and addressing these barriers is therefore essential in order to create environments that genuinely support and value senior students.

These ideas form the theoretical rationale of the project, which sets the stage for the following phase, developed on a more practical level. The research has been organised into three interconnected stages: the first focused on the collection of empirical data through an exploratory survey, while the second and third were devoted respectively to the design of the teaching unit and the SG prototype, drawing on its findings and on the reflections traced in the previous chapters.

The survey was administered to twenty senior students aged 64-74, enrolled at the University of the Third Age in Santeramo in Colle (Italy), in order to gather relevant information concerning their learning paths, interests, and needs. It included a set of multiple-choice questions aiming to collect quantitative data on participants' level of education, prior exposure to English, digital habits, and attitudes towards learning through immersive technologies. In addition, two open-ended questions invited them to elaborate on topics or activities they might want to find in an English course and to describe practical situations in which they are likely to use the language. These responses offered a more personal and nuanced understanding of their learning needs, providing crucial insights for aligning the design of the teaching materials and the content of the videogame prototype with the learners' profiles and expectations.

Overall, the survey has highlighted participants' marked interest in learning a foreign language within travel-related situations, which has helped guide the planning of both the teaching unit and the SG. On this basis, *English for Travelling* has been

designed as a compact five-module mini-course for senior beginners, complemented by a VR-based prototype that extends the classroom work, offering learners the opportunity to rehearse communicative functions in an immersive and interactive environment.

The unit develops through a storyline revolving around Anna, a 60-year-old Italian on her first holiday in London. During her stay, she meets Helen and Tom, who soon become her friends, sharing various moments of her travel experience. Each episode focuses on a basic communicative task, such as ordering in a café, dealing with hotel check-in, buying a tourist travel card, or asking for directions.

The strength of this approach lies in the fact that both characters and situations are presented in ways that feel close to senior learners' world, creating an immediate sense of familiarity and relevance. This, in turn, can increase their motivation, as they clearly see how the communicative skills practised in class may be applied during a future trip abroad. All activities are planned following a student-centred approach that brings together glottogeragogical principles and the methodological guidelines adopted in *Cambridge English* teaching practices. As it has been structured, the lesson sequencing supports active involvement through a balanced alternation of individual work, pair tasks, and small-group interaction. The teacher offers unobtrusive scaffolding, modelling and drilling when needed, eliciting responses, and providing constructive feedback so that students can monitor their progress.

Designed in parallel with the teaching unit, the SG prototype remains a conceptual model intended to illustrate how a VR experience, with its inherent immersive quality, may support the consolidation of classroom learning. In this view, students would revisit the content of the unit through short, goal-oriented tasks linked to a specific communicative focus. In addition, the proposed gameplay introduces small micro-tasks involving manageable, unexpected turns, encouraging participants to adjust and re-apply the linguistic content acquired in each module in a more flexible and critical way. Moreover, the prototype is intentionally conceived to be user-friendly

and intuitive, acknowledging that its end-users may have limited experience with digital technology.

To understand how the teaching unit and the SG prototype could be integrated into a real educational setting, an experiment could be carried out involving the twenty senior learners who took part in the survey. However, an entry test would first be required to determine their actual level of English, so that the teaching materials can be more accurately calibrated to their needs. This aspect was not examined in the exploratory survey, as the questionnaire was designed to gather attitudinal and biographical information rather than assess linguistic competence. Although a dedicated section for measuring learners' proficiency would have been useful for the subsequent design of the activities presented in this phase of the project, it was deliberately omitted to avoid burdening participants with an additional assessment component.

For this reason, the level assumed in the teaching materials has been defined only approximately, based on their reported educational background and previous exposure to English, which suggested a beginner/A1 profile.

Once the learners' actual proficiency level has been established, Module 1 could be revised in line with the results. As for the remaining modules, which have not yet been developed, the new data would guide their creation from the outset, ensuring that their linguistic input and task design are appropriately calibrated. Accordingly, the SG prototype would need to be revised before moving on to its actual development.

Subsequently, classroom practice could be organised following a clear pattern. Each module would consist of five lessons, dedicated respectively to listening, grammar, vocabulary, pronunciation, and speaking, with the aim of providing targeted training in each skill area. After completing each module learners would move to the simulation phase within the SG environment, allowing them to apply and practise the linguistic and communicative structures introduced in class.

A structured assessment phase would then be required to understand whether the combination of classroom instruction and guided VR simulation effectively brings senior students any benefit in terms of language development. The relevance of this step lies in its potential to address a gap in the literature, given that much of the existing research on game-based and immersive language learning focuses on younger learners, whereas older adults remain only marginally represented.

The evaluation would be organised into three steps. A pre-test would be carried out before the course to establish a baseline of learners' linguistic competence. After completing both the classroom and simulation phases, students would take a post-test designed to measure their short-term gains. Finally, a delayed post-test would be administered approximately two weeks later to assess whether these gains are retained over time. In this way, the assessment phase would provide an empirical validation for the project. The pre-test would make it possible to verify whether the A1 target assumed for the course, currently defined only approximately, reflects learners' actual entry level, while the post-test and delayed post-test would document the language skills developed and consolidated over time. Rather than simply collecting test results, this phase would serve to review how well the teaching materials and the SG prototype align with learners' observed performance. In future implementations, the evaluation could be complemented by assessment grids, together with forms of self-assessment and peer-assessment, whether holistic or analytic, in order to capture their progress from different perspectives.

Having established the sequence of steps that define the experiment, it would be sensible to anticipate potential difficulties that could affect its smooth running. There is indeed reason to expect that while the classroom phase can be carried out without major obstacles, thanks to lesson sequencing designed to involve the full group of learners, the simulation phase, in contrast, would pose more concrete challenges, as it would not be realistic to run the VR-based SG with all twenty learners simultaneously. Beyond the issue concerning the limited availability of the equipment, it is also

unlikely that participants would feel sufficiently confident using a headset and controllers on their own. For these reasons, the simulation would need to take place in the classroom under the teacher's guidance and be organised either individually or in very small rotating groups, allowing each learner to complete the tasks with adequate support and supervision.

Another consideration involves the physiological and perceptual responses of older users towards the equipment employed. Some may experience motion sickness or visual discomfort when using VR for extended periods. Pilot sessions would therefore be advisable to test ergonomics, pacing, and comfort, and to ensure a smooth transition between classroom instruction and VR simulation.

Altogether, the project brings together a critical examination of later-life language learning and a practical proposal that translates the theoretical insights into the design of learning materials and a VR-based prototype. The model outlined here offers a coherent structure that can serve as the basis for future empirical work, particularly in a field where older adults remain underrepresented. The next steps will involve implementing the experiment, refining the teaching materials in light of learners' actual proficiency, and developing the VR prototype into a fully operational simulation. In this sense, the study marks the starting point of a broader line of research, providing both direction and methodological grounding for subsequent investigations into how game-oriented approaches can support language education in later life.

APPENDIX

Teaching Material

Module 1 – At the Airport Café (Student Material)

Look at the picture below. Talk to your partner. Ask and answer the questions:

- Where is Anna?
- How is she? (Happy, tired, nervous?)



LISTENING & SPEAKING – "At the Café"

Listen to the dialogues:

- In **Dialogues 1-3** there is a misunderstanding between the barista and the customer, can you explain it?

Dialogue 1	Dialogue 2	Dialogue 3
Read and listen. **Tom:** A cappuccino, please. **Barista:** What's your name? **Tom:** Tom. **Barista:** Dom? **Tom:** No, Tom. Not Dom. **Barista:** Tom. OK.	**Read and listen.** **Barista:** Are you Matthew? **Tom:** No, I'm not. I'm Tom. **Barista:** Sorry, Tom. Your tea. **Tom:** Thanks.	**Read and listen.** **Anna:** A tea, please. **Barista:** What's your name? **Anna:** Anna. **Barista:** Emma? **Anna:** No, Anna. **Barista:** Anna. OK.

Before listening to Dialogue 4

Talk to your partner. Answer the questions below:

- In your opinion, who is this woman?
- Why is she smiling at Anna?



Dialogue 4

Read and then listen:

Helen: Hello!
Anna: Hi!
Helen: It's funny, same problem with the barista!
Anna: Oh, really?
Helen: Yes. I'm Helen.
Anna: I'm Anna. Nice to meet you.
Helen: Nice to meet you, too.

Listen and repeat the conversations.

Work in pairs. Practise the conversations using your own names.

GRAMMAR – Verb *be* (singular): *I* and *You*

Look at picture below. Fill-in the gap:

- What word is missing?



Look at picture below. Fill-in the gap:

- What word is missing?



Complete the table:

Full form	Contraction	Example
I _____	I'm	I'm Anna.
You _____	You're	You're Helen.
I _____ not	I'm not	I'm not Dom.
You _____ not	You aren't / You're not	You aren't Matthew.

Re-write the sentences with contractions

1. I am Tom. → I'm Tom.
2. You are not in London. → You aren't.
3. I am not Helen. → _____
4. You are not at the train station. → _____
5. I am Rob. → _____
6. You are at Heathrow Airport. → _____
7. I am at the Heathrow Café. → _____
8. You are not Dom. → _____

Check your answers with your partner.

Complete the mini-dialogues.

A: Are you Dom? B: No, ____ Tom. A: Oh, _____ Tom.	A: Are you Helen? B: ____, I'm not. I'm Anna. A: Nice to meet you.	A: _____ in London? B: Yes, I _____.

Check your answers with your partner.

Walk around the class. Introduce yourself and ask your classmates simple questions. Use the model below:

Student A: Hi, I'm Anna.
Student B: Hello! I'm Tom.
Student A: Are you from Italy?
Student B: No, I'm not. I'm from the UK

VOCABULARY

Listen and repeat the numbers

0 zero 1 one 2 two 3 three 4 four 5 five 6 six 7 seven 8 eight 9 nine 10 ten

11 eleven 12 twelve 13 thirteen 14 fourteen 15 fifteen 16 sixteen 17 seventeen

18 eighteen 19 nineteen 20 twenty

Rhythm Game

Work in pairs.

- Sit facing your partner.
- One student says a number between 0 and 20 with rising intonation.
  Example: **"One?"**
- The partner immediately says the next number with falling intonation.
  Example: **"Two!"**
- Continue alternating turns.
  Example:
  A: "Eleven?" B: "Twelve!"
  A: "Nineteen?" B: "Twenty!"
- Change roles. The other student starts first.

Number Bingo: Play in class.

1. Listen to the numbers your teacher says.
2. Find each number on your grid.
3. Circle the number or raise your hand.
4. When you have a complete line, say **"Bingo!**
5. Check your numbers together

Your Bingo Grid

0	3	8	11	16
1	5	9	12	17
2	6	10	13	18
4	7	14	15	20

Role Play "Ordering at the Café". Work with your partner:

1. Look at the café menu. You can see drinks, snacks, and desserts with prices in pounds.
2. Student A is the customer. Student B is the barista.
3. Choose more than one item, calculate the total amount, and act out the conversation.
4. Change roles and play again.



5.1. PRONUNCIATION

5.2. Listen and repeat:

- /h/ – hello, hi, Helen, how
- /θ/ – three, thanks, Thursday
- /ð/ – this, that, they

Repeat rhythmically:

"Hi, Helen!" *"Thanks, Helen!"* *"This Thursday!"*

Work in pairs. Read and practise the dialogues:

💬 **Situation 1 – Greeting at the café** A: Hi, I'm Helen. B: Hello, Helen!	💬 **Situation 2 – Ordering drinks** A: Three teas, please. B: Thank you!
💬 **Situation 3 – Introducing someone** A: This is Tom. B: Oh, hi Tom!	💬 **Situation 4 – At the till** A: Three pounds thirteen, please. B: Oh, that's fine, thank you.

SPEAKING

Setting the scene

Look at the picture below:



Anna has just received her tea and sits down at a nearby table. Helen, who has just finished her drink, turns to her and smiles.

Helen: *Same problem!*
Anna: *Oh, really?*

Now Anna and Helen start a friendly conversation. They introduce themselves and talk about when they might meet again.

Short vocabulary Focus: Days of the Week

Put the days of the week in the correct order:

Monday Friday Tuesday Sunday Thursday Wednesday Saturday

Listen and repeat, stress the intonation:

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

Practise with. your partner. Say the sentences aloud.

See you on Monday. / See you on Friday. / See you on Sunday.

Language Focus: Greetings & Farewells

Look at the two columns. Read the expressions:

MEETING	**LEAVING**
Hello! / Hi!	Goodbye / Bye
What's your name?	See you on Monday / tomorrow
I'm Anna.	Have a nice day!
Nice to meet you.	See you soon!

Practise with your partner. Say the expressions aloud. Wave hello when you greet, and wave goodbye when you leave.

Write each expression in the correct column.

MEETING	**LEAVING**
_____	_____
_____	_____
_____	_____

Listen and repeat the short conversations.

Dialogue 1 – Introducing each other	**Dialogue 2 – Saying goodbye**
Helen: Hello! **Anna:** Oh, Hi! **Helen:** Same problem with my name! *(Helen points at the barista. Anna doesn't understand at first, but then she does.)* **Anna:** Oh, really? **Helen:** Yes! What's your name? **Anna:** My name is Anna. What's your name? **Helen:** I'm Helen. Nice to meet you. **Anna:** Nice to meet you, too.	**Anna:** Goodbye, Helen. See you on Friday. **Helen:** OK. Bye!

Practise with your partner. Repeat the dialogues together. Speaking Practice. **Walk around the class.** Use the scheme below to say hello, introduce yourself, and say goodbye. Practise with different classmates. Change the names and days of the week each time you speak.

Hi, I'm … Are you …?

↓

(Yes, I am.) (No, I'm not.)

Nice to meet you. What's your name?

(I'm …)

Nice to meet you

See you on … **See you, bye.**

My Diary – Module 1

(Puoi compilare in italiano.)

Hai mai viaggiato all'estero?
Have you ever travelled abroad?
□ sì □ no

SE HAI RISPOSTO SÌ → completa le domande 2–3–4
SE HAI RISPOSTO NO → passa alla domanda 5

Dove sei stato?
Where have you been?

Risposta: _____

Ricordi un episodio all'estero in cui hai ordinato qualcosa (da bere o da mangiare)?
Do you remember a moment abroad when you ordered something (to drink or to eat)?

Risposta:
_____
_____
_____

Come ti sei sentito/a nel momento in cui hai dovuto ordinare?
How did you feel when you had to order?
(puoi scegliere più opzioni)

□ tranquillo/a
□ nervoso/a
□ emozionato/a
□ curioso/a
Altro: _____

Perché? *(Why?)* _____

Se non hai ancora viaggiato all'estero, immagina di andare a Londra domani:
If you have never travelled abroad, imagine going to London tomorrow.

a) **Cosa ordineresti al bar o al risotrante?**
What would you order at the restaurant or the café?
Risposta: _____

b) **Come pensi che ti sentiresti nel momento dell'ordine?**
How do you think you would feel when ordering?
(puoi scegliere più opzioni)

□ tranquillo/a
□ nervoso/a
□ emozionato/a
□ curioso/a

Altro: _____

Perché? *(Why?)* _____

How did I learn the new content?

Put the following Learning Strategies (LS) into practice:

LS1 – I repeat new words or short phrases several times to memorise them.
LS1 – Ripeto le parole o le espressioni nuove più volte per memorizzarle.

LS2 – I use new words by creating short personal sentences.
LS2 – Uso parole nuove creando semplici frasi personali.

LS3 – I memorise expressions thinking about their context of use to apply them naturally when I speak.
LS3 – Memorizzo le espressioni pensando al loro contesto di utilizzo per applicarle in modo naturale quando parlo.

Scrivi 3 volte i giorni della settimana in ordine corretto.
Write the days of the week in the correct order three times.

Scrivi due semplici frasi personali usando una parola nuova del modulo (un giorno o un numero o un Paese).
Write two short personal sentences using one new word from this module (a day or a number or a country).

Esempi:
I'm from Italy.
See you on Friday.
I'm 67.

1. ---
2. ---

Spunta (✓) se l'espressione "Here you are" è corretta nel contesto. Metti una croce (✗) se non è corretta.
Tick (✓) if "Here you are" is correct in that context. Put a cross (✗) if it is not correct.

- □ You say *Here you are* when you give the money to the barista.
- □ You say *Here you are* when you receive the coffee from the barista.
- □ You say *Here you are* when you hand the receipt to your friend.

B) SELF-CHECK

Queste strategie (LS1-LS2_LS3) per me sono:
These strategies (LS1-LS2-LS3) are for me:

a □ del tutto nuove / *completely new for me*
b □ non nuove, ma non le usavo / *I knew them, but I didn't use them*
c □ già note e già usate / *I already used them*

Quanto le ho trovate utili?
How useful did I find them?

Scala da 1 (per nulla) a 6 (moltissimo)
Scale from 1 (not at all) to 6 (very much)

Learning Strategy	**1**	**2**	**3**	**4**	**5**	**6**
LS1	○	○	○	○	○	○
LS2	○	○	○	○	○	○
LS3	○	○	○	○	○	○

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