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Research Article

I think learning ancient Greek via video game is…': An online survey to understand perceptions of Digital Game-Based Learning for ancient Greek

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Abstract

Playing is connected at a deep level to how we learn, participate in and create culture, as it is dynamic, complex and even unpredictable just as learning is (Reinhardt, 2019). Even Plato in his *Theaetetus* recognises the importance of such a component in experiencing culture and knowledge. Could playing (or gaming) therefore be a useful didactical approach in promoting the study of ancient Greek around the world? From 10th May 2023 at 1 pm. until 1st June 2023 at 1 pm., an internet survey was conducted online by the researcher Irene Di Gioia through the use of Google Forms questionnaires. This questionnaire was distributed via different social networks and communication tools. The survey aimed to understand if people around the world are interested in the idea of learning ancient Greek via a video game and if so, which video gaming activities learners prefer. The goal of the survey was therefore to understand if a ludic pedagogical approach using Digital Game-Based Learning could theoretically represent an interest experience for learners or potential learners, and furthermore to investigate their feelings, prejudices, and motivations regarding the study of ancient Greek. From the analysed data the researcher will therefore develop a video game to teach ancient Greek language and culture, which comprises the focus of her ongoing PhD dissertation at Georg-August University of Göttingen (Germany) and Alma Mater Studiorum University of Bologna (Italy).

Keywords: Digital Game-Based Learning, ancient Greek, online survey, video games, learning

Introduction

Ancient Greek is one of most influential corpus languages for the European landscape. For example, according to the British Council (Peraki and Vougiouklaki, 2015), more than 150,000 modern English words come from ancient Greek, while most of the Romance languages (e.g., Italian, Spanish, French, Portuguese, etc.) derive their words from Latin, which itself derives from ancient Greek. Furthermore, ancient Greek continues to have a profound cultural influence in many fields that are not strictly connected to the language itself (e.g., philosophy, mathematics, medicine, etc.).

Such a strong influence could lead one to believe the study of ancient Greek to be widespread, at least in Europe. However, the data shows the exact opposite. Ancient Greek is in fact suffering from a low number of enrolled students and the number of available courses around the world is similarly unpromising (Le Hur, 2022; Ministero dell'Istruzione e Merito, 2023). Within this bleak outlook, the Italian and Greek school systems remain however as two of the few that offer compulsory ancient Greek learning.

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In Italy, ancient Greek is still taught in one type of high school, *Liceo Classico*, throughout all five years of high school. This program consists of 132 annual teaching hours for the first two years, and 99 hours for the last three (D.M. 211/2010, 2010). In Greece, and specifically in Cyprus, all secondary school students 'have to attend 50 teaching hours of ancient Greek language for each of the three years of *gymnasium* and the first year of *lyceum*' (Pavlou, 2020, 42), while 'for humanities majors, the ancient Greek language workload rises to 75 teaching hours during the second and third years of *lyceum*' (Pavlou, 2020, 42). At the same time, however, in the American educational system just 13 public schools out of a nationwide total of 98,575, according to most recent data by the National Center for Education Statistics (National Center for Education Statistics, 2022), offer ancient Greek courses (TCA's Greek Too!: Schools Currently Teaching Greek, 2001).[1] It is however fundamental to focus on why such language should still be taught.

In today's pluricultural world, ancient Greek can be a magnifying lens to better understand diversity and to learn how to appreciate it - a fundamental skill for new generations. As Dionigi explains, ancient Greek makes us enter into the language of diversity, teaching us the culture of *et et*, i.e. of inclusion, rather than that of *aut aut*, i.e. of exclusion (Dionigi, 2008, 129). In light of these motives, ancient Greek represents a language of great importance that should therefore be promoted in educational environments not only as a tool to better master languages, problem-solving or logical

skills, but also primarily as a practice field within which one can learn how to understand and appreciate other cultures i.e., to improve one's intercultural competence.

Intercultural competence is considered that ability that allows one to: observe, decentralise and estrange oneself in order to get to know a new culture and its aspects without preconception or emotional filters; learn to suspend judgement and ask for explicative feedback on not understood aspects of other cultures; learn to relativise and to actively listen; and learn to emotionally understand others both empathetically (i.e, participating on an emotional level) and in an 'ex-optic' (i.e., external) way i.e., recognising their own differences and those of others as natural and obvious (Balboni, 2016).

How can one therefore promote the process of teaching and learning of ancient Greek? One heretofore still largely unexplored method is by playing (Manolidou and Goula, 2023), or more specifically by gaming.

Digital game-based learning (DGBL): a quick overview

Before diving into the definition of DGBL, it is important to understand what 'game' and 'play' are. As Reinhardt (2019) points out, play is an essential component of being human, almost a pre-cursor to culture. An omni-comprehensive definition of play is however very difficult to give as it depends on the subjective nature of the concept. Some researchers, such as Huizinga (1950), define play as

> a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is different from ordinary life (Huizinga, 1950, 28).

Reinhardt points out however that play must not always have limits of time and place and that 'the idea that the aim of play is 'in itself', in other words it is unproductive, is also problematic if we recognise that ludic or goal-oriented play is intentional and rule bound' (Reinhardt, 2019, 47). Thus,

> the definition of play, that it tends towards the voluntary, delimited, rule-based, intrinsically motivating, and extraordinary, can be problematic if we use it to exclude some activities which the player themself considers to be play, because the term is highly subjective (Reinhardt, 2019, 73).

It is also interesting to note that play is often explained to children by adults by pointing out to them the difference between play equalling fun versus work equalling not fun. This idea represents an aspect that children might not even have seen before as they tend not to consider play as something extraordinary or out of normal life (Reinhardt, 2019, 48). Therefore, as Reinhardt affirms

> Defining play as something that takes place outside of the everyday and unremarkable overlooks its involvement in transforming the ordinary to the extraordinary. If we do not challenge our unexamined beliefs that play is the opposite of work, we may not be able to recognise that play can be involuntary, serious, and necessary, and that as such, it may not only be requisite for learning, but also part of how we generate culture and participate in it as adult (Reinhardt, 2019, 48).

Playing is connected at a deep level to how we learn, participate in and create culture as it is dynamic, complex and even unpredictable, just as learning is (Reinhardt, 2019, 47). Intertwined with play is the notion of game. Reinhardt defines in his research a game as a rule-structured, narrativisable form of play (Reinhardt, 2019, 98), pointing out that a holistic definition is hard to find for the same reasons as those relating to the definition of play. Ludologist Jesper Juul defines a game as

> [a] rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable (Juul, 2005, 36).

This definition is quite interesting as the author considers a game as a formal system, and focuses on the relationship between player and game, pointing out the importance of the emotions of the player. However, it is evident that among researchers in the field there is no unambiguous agreement as to what a game (or play) is, even though almost all agree on the characteristics of a game itself. Therefore, play and game appear to be two sides of a coin, as the differences between one and the other seem quite difficult to delineate given that different characteristics of the former interconnect with others of the latter (e.g., the motivation pull). However, in the following discussion, play will be intended as a macro-category of which game is an expression with specific characteristics.

In fact, most researchers agree on the following characteristics of game, wherein a game is a reality that: (1) is rule-based, (2) is responsive, (3) provides feedback and responses, (4) is challenging, (5) has a cumulative progress, and (6) is inviting and motivating to engage with (Plass *et al.*, 2020, 3).

Therefore, DGBL is a pedagogical approach that redesigns tasks to make them more interesting, meaningful and effective by using the full range of digital game features (Plass *et al.*, 2020). It is important to note that DGBL should not be confused with either gamification or playful learning. Gamification represents the 'addition of specific game features, mainly involving the reward system and narrative structure, to an existing (non-game) learning environment in order to make it more motivating' (Plass *et al.*, 2020, 3). Playful learning similarly shares the idea that 'a full game is not always needed when a learning task is redesigned to make it more effective in terms of relevance, meaning, and interest' (Plass *et al.*, 2020, 5). The main difference between DGBL and playful learning is therefore that in the latter, game features are used only in subtle ways and not in a holistic way. Further, the difference between playful learning and gamification is instead a conceptual one as playful learning changes the learning approach in order to include game features, while gamification adds game elements with no change in the learning approach. In light of these definitions, it is evident that DGBL implies a new pedagogy and at the same time a new way of learning.

Linguist Gee (2007) wrote a seminal book for pedagogical approaches that use games to improve language learning. Gee (2007) focuses on the influences of games on learning and literacy, and by analysing different video games he proposes 36 learning principles that happen during gaming. Only the most relevant to this paper will be analysed.

Number 1: Active, critical learning principle: 'All aspects of the learning environment (including the ways in which the semiotic domain is designed and presented) are set up to encourage active and critical, not passive, learning' (Gee, 2007, 221). This principle

aligns with the idea of proposing a more active rather than passive approach to ancient Greek learning, as the didactics of modern languages show that no language learning is possible if the language is not actively used (Villarini, 2021).

Number 10: Amplification of input principle: 'For a little input, learners get a lot of output' (Gee, 2007, 222). This principle aligns with the didactics of modern languages which suggest that the more exposure to a target language that language learners have, the more likely they are to improve their language skills (Villarini, 2021).

Number 12: Practice principle: 'Learners get lots and lots of practice in a context where the practice is not boring (i.e., in a virtual world that is compelling to learners on their own terms and where the learners experience ongoing success). They spend lots of time on task' (Gee, 2007, 223). This principle underscores the importance of motivation, as the more motivated (and engaged) the learner is, the more likely they are to keep learning (Kuhlmann, 2012).[2] Therefore, if the learning environment is interesting and stimulating, one tends to keep engaging with it. Moreover, as already mentioned, the more occasions of practice a language learner has, the more likely they are to improve language skills (cf. *supra*).

Number 15: 'Probing principle': 'Learning is a cycle of probing the world (doing something); reflecting in and on this action and, on this basis, forming a hypothesis; reprobing the world to test this hypothesis; and then accepting or rethinking the hypothesis' (Gee, 2007, 223). This principle highlights a fundamental unconscious action that takes place while learning a language i.e., the forming and probing of linguistic hypotheses. As seen in young children learning their native language, the process of learning a language is a constant mechanism of forming hypotheses, probing them, and accepting them or rethinking them. For ancient Greek, where communicative fluency is not the target of language learning, this principle appears to be most important for the process of translating and reading. By translating (or simply reading), one forms hypotheses about specific language phenomena and tries to understand if they are suitable for the context (e.g., facing a structure such as ὑπὸ Φιλίππου, one must form a hypothesis and decide by probing the hypothesis in the context if this structure means e.g., 'underneath Philip' or 'by Philip').

Number 17: 'Situated meaning principle': 'The meaning of signs (words, actions, objects, artifacts, symbols, texts, etc.) are situated in embodied experience. Meanings are not general or decontextualised. Whatever generality meanings come to have is discovered bottom up via embodied experiences' (Gee, 2007, 224). Deeply connected with **Number 15**, this principle recalls the idea of didactics of modern languages of inductive learning. Inductive learning conceives language learning as a process that starts by analysing the general context in order to reach the particular phenomenon and not vice versa (as in deductive methods such as the grammatical-translation approach).

Number 18: 'Text principle': 'Texts are not understood purely verbally (i.e., only in terms of the definitions of the words in the text and their text-internal relationship to each other), but are understood in terms of embodied experiences. Learners move back and forth between texts and embodied experiences. More purely verbal understanding (reading texts apart from embodied action) comes only when learners have had enough embodied experience in the domain and ample experiences with similar texts' (Gee, 2007, 224). This principle is again connected with the previous one and shows the importance of ergodic learning, which indicates the need of doing actual actions to get in touch with and understand the phenomenon.

Number 29: 'Transfer principle': 'Learners are given ample opportunity to practise, and support for transferring what they have learned earlier to later problems, including problems that require adapting and transforming that earlier learning' (Gee, 2007, 226). This principle aligns with the idea of a growth mindset which conceives learning (in this specific case ancient Greek) as an opportunity to develop oneself, as opposed to a fixed mindset which understands learning as merely a way to demonstrate one's intelligence (Evans, 2016).

DGBL and ancient Greek

Why then combine DGBL with a corpus language such as ancient Greek? To begin with, as Pavlou (2020) shows, Plato himself suggests an interesting point of view about play and knowledge in his *Theaethetus,* a dialogue in which the characters reason on the nature of knowledge. Socrates poses the main and starting question as he cannot tell what the nature of knowledge actually is.[3] In order to reason about it, he suggests playing a game[4]: if one makes a mistake, they should sit down and be called a 'donkey', while if one is successful, they will be 'king' and can order the others to answer any questions they want. As Pavlou points out,

> playfulness is evident throughout the dialogue and goes hand in hand with seriousness, a noticeable combination that runs counter to modern discussions of philosophy which are typically conspicuous for their gravity (Pavlou, 2020, 43).

Throughout the entirety of the dialogue, Socrates insists on making Theaetetus express his mind by playing and pondering possibilities (Pavlou, 2020). He points out to Theaetetus that 'the effectiveness of their discussion depends on their genuine and mutual willingness to keep 'playing,' that is, to keep asking questions and trying to provide answers' (Pavlou, 2020, 44). Socrates then explains to Theaetetus what a good player (or player-learner) should be like[5]: they should, e.g., have what today is called critical thinking (i.e., not accepting everything as knowledge just because told by someone, but rather being critical about it and putting it under scrutiny (179c)); be prepared to experiment with situations, even when the outcome is not sure (200e–201a); and not give up easily but put in effort, thinking about errors as an opportunity (152d, 190e–191a).

It therefore seems clear that even thousands of years ago the potentiality of combining what is perceived as 'serious' (e.g., philosophy or ancient Greek) with what is perceived as playful or fun (e.g., playing a game) was already known to intellectuals such as Plato. However, this theoretical basis, i.e. the idea that playing can be useful for learning (and especially for 'serious' subjects such as ancient Greek) is corroborated by other practical, researched and demonstrated factors.

First, as research has shown, using video games to learn a language (e.g. ancient Greek) puts the focus not on language's structures (i.e., focus on forms), but on its meaning, thereby becoming a tool that allows and helps with playing (i.e. focus on form) (Baltra, 1990). Therefore, language is seen not as merely the sum of different linguistic structures, but rather as a means to solve problems and to go on with the storytelling (Baltra, 1990).

Secondly, video gaming for language learning encourages meaningful discovery learning as contents and abilities are not directly presented but must be discovered by the player-learner (Baltra, 1990). Moreover, 'a gamified learning environment promotes ownership of one's learning process, by offering an

organised space in which intrinsically motivated goals can be achieved' (Evans, 2016, 2). Language learning through playing can help develop a growth mindset e.g., a mindset that sees learning as an opportunity to develop oneself, rather than a fixed mindset which understands learning as a way to demonstrate one's intelligence (Evans, 2016). Thus, learning ancient Greek through video gaming could suggest a new conception of ancient Greek itself: it could be seen not merely as a tool to demonstrate intelligence or capabilities, but rather as a tool to learn to learn, to develop mastery instead of proving knowledge (Evans, 2016). A gamified environment for ancient Greek could therefore allow students to be exposed at the same time to peer and teacher scaffolding, to understand that failing is a necessary experience of language learning and that it doesn't necessarily cause negative consequences (but that on the contrary, it is indeed necessary for developing language mastery) (Evans, 2016) and finally it could promote active learning, rather than the far more common passive learning.

Thirdly, discovery or active learning facilitates cooperative learning, a fundamental aspect of language learning and particularly so for language e-learning (Bagus Setiadi, 2018; Thomas, 2012).

Fourthly, language learning through video gaming can integrate four language skills i.e., listening, speaking, reading and writing. This specific aspect could be extremely useful for ancient Greek learning for two main reasons: by using the language (even if not with the idea of communicative proficiency as ancient Greek is a corpus language), learners could better understand language mechanisms by using and internalising them; moreover, using any language, even a fictive one, as a tool could deeply improve motivation and perception of meaning in what one is doing (Kuhlmann, 2012). Video games are certainly powerful tools for language learning because they can encourage the development of communicative fluency through lively discussions, reading, vocabulary building, note-taking, and even essay writing (Baltra, 1990).

As research has shown, contextualised language learning is to be preferred as users are more likely to make and learn linguistic associations and mechanisms within a narrative (Reinhardt, 2019; Thomas, 2012). Therefore, learning vocabulary is easier and more memorable when words are in semantically related groupings and language learning in general is more efficient when it is narrativised (Bagus Setiadi, 2018; Reinhardt, 2019).

Lastly, digital game-based language learning (DGBLL) could help with increasing motivation (Bagus Setiadi, 2018; Baltra, 1990; Reinhardt, 2019; Reinhardt & Sykes, 2012; Thomas, 2012). As Malone (1981) has shown, playing in general is motivating for these two main reasons: video games promote fantasy and curiosity which can contribute to increasing motivation; and video games offer challenge, which can be divided in six elements. Challenge can (and should) offer: (1) clear goals because when goals are clear, motivation increases; (2) constant feedback; (3) uncertain goal attainment, as one should not always be sure they will attain a goal in order to maintain a high level of engagement. Therefore, the game should be neither too difficult nor too easy. However, this aspect is not easily obtained for DGBLL as most commercial video games are too difficult for a non-native language learner; (4) hidden information, which means that one should need to put in effort to discover new information. For DGBLL that means that students are motivated to discover new language mechanisms as this particular discovery could help them go on with the game; (5) unpredictability, which means that various outcomes are displayed

at various points; and (6) randomness which is strictly connected to unpredictability and aims to increase motivation and engagement (Baltra, 1990). DGBLL could also attract young people to learn in their leisure time, rather than dedicating time towards other entertainment social media such as Instagram or TikTok (Thomas, 2012). DGBLL shares the idea that learning can be both a form of play and an experience (Thomas, 2012): thus, one can ask if gaming could in fact encourage those who have abandoned the study of ancient Greek to re-engage and/or attract new learners.

However, even though the pros for DGBLL are numerous, there are also several cons. As Bagus Setiadi (2018) has shown, DGBLL could augment cognitive load, especially in weak readers; linguistic feedback as well as communication between students and teachers could be found lacking; and a game's curriculum may not always align with a teacher's curriculum, thereby increasing the teacher's workload. Moreover, one could fall into an exaggerative and idealistic attitude about digital education's benefits, meaning one could think that the mere appearance of digital technologies alone is sufficient to transform learning environments (Rivoltella & Rossi, 2019; Thomas, 2012). Lastly, another risk is to propose an old paradigm with a new aspect, such as the *Duolingo* app, which relies on the traditional grammatic-translation method but in a digital setting (Troncarelli, 2016).

The online survey

From 10th May 2023 at 1 pm. until 1st June 2023 at 1 pm. an internet survey through a questionnaire has been conducted online through Google Forms and shared via different social networks (Facebook and Instagram) and communication tools (emails, text messages, Whatsapp). The exact same questionnaire (i.e. same structure and same questions), from now on referred to as Questionnaire A, was available in English and in Italian.[6] The goal of this questionnaire was to investigate the respondents' feelings, prejudices, and types of motivation towards learning ancient Greek, as well as their desires to learn ancient Greek in a hypothetical video game.

Therefore, the questionnaire was divided in six parts: (1) privacy policy; (2) personal information; (3) reasons for learning ancient Greek; (4) ideas about learning ancient Greek; (5) feelings towards learning ancient Greek; and (6) thoughts and preferences regarding a video game to learn ancient Greek. Part 3 investigates the type of motivation (i.e. extrinsic, intrinsic) towards learning ancient Greek, parts 4 and 5 the prejudices, ideas, and feelings towards ancient Greek, and finally, part 6 investigates learners' feelings about learning the language via video game. The questionnaire was made accessible to learners and non-learners of ancient Greek due to the desire to investigate general perceptions of ancient Greek in non-learners as well.

The total number of respondents to the questionnaire was 345; however 14 people (4.06%) have not agreed to the privacy policy. Therefore, the effective number of analysable respondents is 331 (95.94%). Of these 331 people, 197 identify as female, 127 as male, and 7 preferred not to answer. The respondents come from various different parts of the world: 2 from the Middle East (Egypt, Syria), 6 from South America (Brazil, Mexico, Chile, Colombia, Costa Rica), 8 from the USA, 4 from Australia, 30 from Europe ex-Italy (Belgium, Croatia, Czech Rep., Germany, Greece, Poland, Portugal, Romania, Serbia, Slovakia, Spain, Ukraine), 37 from the UK, and 244 from Italy.[7] The ages of the respondents were similarly varied, with the questionnaire differentiating respondents into 13 age groups (13, 14, 15, 16, 17, 18, 19, 20–30, 30–40, 40–50, 50–60, 60–70, 70+). The largest age group was the 20–30 category (123

respondents), followed by the 14-age group (33) and the 30–40 group (32). Given that the target of this research is 13–14-year-old learners, the most interesting categories are the 13-age group (4 respondents) and 14-age group (33). The other groups representing teenagers are also of particular importance, including the 15-age group (13), 16-age group (13), 17-age group (16), 18-age group (18), and 19-age group (25).

As mentioned, the questionnaire was open to learners and non-learners, as it seemed sensible to the researcher to understand which overall and shared perceptions, thoughts and feelings are connected to ancient Greek. This decision is justified by the desire to understand if there are indeed some general shared negative feelings towards ancient Greek (e.g., demotivation, anxiety, fear, discouragement, etc.) amongst both learners and non-learners alike, and to try to find solutions to such hypothetical negative feelings.

The number of learners was 230, while 101 respondents reported never having studied ancient Greek. Within the 230 learners or ex-learners, 50 people (aged between 20 to 70 years old) have studied it for more than five years. 82 respondents have studied ancient Greek for exactly five years (presumably during the duration of high school, especially the Italian high school which lasts five years). 42 respondents (mostly aged 14 years old) have been studying ancient Greek for one year; however, eight respondents out of the 42 are aged between 19 and 50 years old, a fact that shows that they have decided to stop their study of ancient Greek after just one year. Amongst the learners, 22 respondents have achieved a PhD, 46 a masters, 30 a bachelors, 78 a high school diploma, and 54 a middle school diploma. Conversely, amongst non-learners, four have achieved a PhD, 23 a maste's, 15 a bachelors, 49 a high school diploma, seven a middle school diploma, and two have ended their studies with elementary school.

For the purposes of this paper, only part 3 (i.e., why learning ancient Greek), part 5 (i.e., feelings) and part 6 (i.e., a video game to learn ancient Greek) will be considered.

[Questionnaire] Part 3: motivation towards ancient Greek

Didactics of modern languages generally divide motivation into two types: the former, called intrinsic motivation indicates 'when a person undertakes an activity for its own sake, for the enjoyment it provides, the learning it permits, or the feeling of accomplishment it evokes. Intrinsic motivation is when a learner opens a book and reads for self-fulfillment, not because of some external reward' (Kapp, 2012, 52); the latter, called extrinsic motivation, indicates the individual behaviour that allows one to gain a reward and avoid consequences: 'It is when a person seeks to earn something that is not directly related to the activity. The motivation doesn't come from within the person; it comes externally' (Kapp, 2012, 52). Villarini points out that the former can also signify an individual cultural interest to be able to get in touch with the community of the target language, a desire to speak the language and be part of the community, an interest in cultural expressions of the target language e.g. art, cinema, literature, etc., while the latter shows the desire to reach a defined and prefixed goal such as passing an exam which means that the desire comes by necessity. Therefore, intrinsic motivation represents a less strong but more long-lasting drive, while extrinsic motivation is the opposite (Villarini, 2021).

Another approach to analysing motivation is the Self-Determination Theory (SDT) by Deci and Ryan which represents a broad general theory on human motivation and personality, and is subdivided into six different 'mini-theories' (Deci & Ryan, 2000;

Ryan & Deci, 2020). SDT does not perceive extrinsic and intrinsic motivation as two opposite realities which do not interfere with one another, but rather as two opposite points of a straight line on which motivation itself can move. This means that, for example, extrinsic motivation can progressively develop into intrinsic motivation (and vice versa) according to different degrees of internalisation. Moreover, extrinsic motivation is thought of as a four-level reality that can span from external regulation to integration according to the different perceived loci of causality. Another interesting aspect of SDT is the attention to amotivation - the lack of motivation that is often linked with a lack of perceived competence and value, and the perception of non-relevance.

SDT pays particular attention to the role of intrinsic motivation. According to one of its mini-theories, Cognitive Evaluation Theory (CET), in order to guarantee development and maintenance of intrinsic motivation, and consequently a high level of engagement, performance, persistence and creativity in activities, three factors must be supported: autonomy, competence, and relatedness.

Autonomy indicates 'a sense of initiative and ownership in one's actions' (Ryan & Deci, 2020, 2). It can also be seen as a sense of volition or willingness to do a certain task (Ryan *et al.*, 2006). It can be supported by experiences that cause interest and that are perceived to be of value, and can be undermined by a sense of being externally controlled (e.g. by rewards or punishments). Competence concerns 'the feeling of mastery, a sense that one can succeed and grow' (Ryan & Deci, 2020, 2). This feeling can be supported by experiences that offer challenges, positive feedback and the possibility for growth. Finally, relatedness represents 'a sense of belonging and connection' (Ryan & Deci, 2020, 2) that can be reached e.g. with shared experiences. If one of these three aspects is not guaranteed, then motivation and psychological well-being are at risk. As will be later discussed, intrinsic motivation is typical of play settings and especially of video games (Ryan *et al.*, 2006).

According to SDT's hypothesis towards education and learning, '(a) more autonomous forms of motivation will lead to an enhancement of students' engagement, learning, and wellness; and (b) […] basic psychological need support from both teachers and parents facilitates such motivation, whereas need thwarting undermines it' (Ryan & Deci, 2020, 4). However, as cultural perceptions of motivation may vary, 'SDT makes etic claims concerning the universal importance of its basic psychological needs for autonomy, competence, and relatedness, yet it also recognises emic variations in the salience, meaning and dynamics of needs between cultures' (Ryan & Deci, 2020, 9).

As Milanese (2012) and Zanetti (2012) show in their analysis of the Italian educational system, the most common type of motivation found in Italian schools is extrinsic, as students tend to learn ancient Greek because it is compulsory and they must pass a monthly test. However, as Milanese (2012) points out, in the past not having studied Latin and ancient Greek could preclude one's access to superior professions, while currently that is no longer the case. That means that a complex study such as that of ancient Greek no longer guarantees any professional advantage, which facilitates the progressive disinterest in language learning. Thus, ancient Greek learning, according to the aforementioned studies, is not only lacking in intrinsic motivation, but also lacks even a 'long distance' extrinsic motivation. Similarly, a lack of motivation towards learning ancient Greek (or Latin) and a decrease in ancient Greek language courses offered has also been noted in other educational systems as well e.g., in Greece (Pavlou, 2020), in the United Kingdom (Newland, 2016), and in Belgium, France and Malta (Bracke, 2015).

However, it is important to take into account the results of Questionnaire A. Data seem to indicate clearly that the main kind of motivation of ancient Greek learners is intrinsic motivation, at any age, which contradicts what has been found in previous studies (Bracke, 2015; Milanese, 2012; Newland, 2016; Pavlou, 2020).

First, according to the data, most respondents seem at a first glance highly intrinsically motivated; the responses to the questions examining intrinsic motivation were consistently 'agree' or 'strongly agree'. Conversely, the responses to questions measuring extrinsic motivation were mostly 'disagree', 'strongly disagree', or 'neutral'.

However, even if the results of part 3 of the questionnaire suggest that the main type of motivation in learners and non-learners of ancient Greek is intrinsic, upon closer examination, one can see the necessity of separating the notion of 'interest' from that of 'motivation'. In fact, when asked to select feelings associated with learning ancient Greek (i.e. in part 5 of the questionnaire), the most prominent response was 'interest' (e.g. out of 230 learners, 175 have selected the option), but surprisingly, the option 'motivation' was far less commonly selected (70 times out 230 learners). Such data could therefore suggest that while many respondents feel highly interested in the subject, far fewer feel motivated to actually learn it. Such a discrepancy could be justified by the hypothesis that even if learners desire to learn the language, the tools and strategies used to teach it heretofore available to them have failed to make them feel all that motivated, which reconnects to what has been found by other researchers (Manolidou & Goula, 2023). Such an assumption can therefore corroborate the hypothesis of using DGBL in the study of ancient Greek to improve the perception of motivation in learners.

[Questionnaire] Part 5: feelings, difficulties and desired activities in ancient Greek learning

Questionnaire A Part 5 investigated feelings, difficulties and potentially appealing activities in ancient Greek learning. As for feelings, it is remarkable to note the aforementioned contrapositions of 'interest' (175) vs. 'motivation' (70), as well as of 'fun' (69) vs. 'play' (27).

Such a strong opposition between the notion of 'fun' and that of 'play' suggests that even if ancient Greek is perceived as something enjoyable and fun, in most respondents' perception it is not connected to the ideas of playing or game. These data seem to contradict what has been observed by Reinhardt (2019, 48), i.e. the associations of play equals fun and study/work equals not fun/seriousness. In this case, it seems that something 'serious' such as studying ancient Greek, even if it is not perceived as play or game, can still conjure feelings of fun and stimulation for most respondents. It can therefore be hypothesised that when learners are highly interested in a subject, this subject is perceived as something fun, but that 'fun' does not directly equal 'play'.

Other highly selected options regarding feelings towards ancient Greek amongst learners were 'discovery' (170) and 'difficulty' (152): ancient Greek is perceived as something difficult but at the same time a tool to discover new things.

The most desired and selected activity in an ancient Greek course has been 'learn words' meaning', followed by 'read ancient Greek texts', 'actively use the language', and 'solve puzzles'. Therefore, a didactical approach that deductively helps students learning grammar and vocabulary to be able to understand and read ancient Greek texts, but that inductively pushes learners to actively use the language as well by e.g. solving puzzles or playing, seems the most sensible choice for a more learner-oriented language course. The

hypothesised efficacy of such an approach is therefore confirmed by the survey's results.

[Questionnaire] Part 6: a video game to learn ancient Greek

Questionnaire A Part 6 aimed to understand respondents' relative openness to learning ancient Greek via a video game. The first question of part 6 aimed to understand if the idea of learning ancient Greek via a video game could be interesting for most respondents. The question was: 'Would you like to learn ancient Greek via a video game?'

Within the learners (230 in total), 163 (71%) respondents answered 'yes', 49 answered 'maybe', and 18 answered 'no'. It is interesting to note that the majority of non-teenage respondents (i.e. those in the 20–30, 30–40, 50–60 and 60–70 years old age groups) seem to be interested in the idea of learning via a video game. These data are remarkable as they refute the myth that playing video games is an activity only for teenagers, and are further of great relevance as they suggest that amongst learners and non-learners of ancient Greek there is an open-minded mentality towards video games for learning, which is an encouraging starting point for further research development.

85% of young teenage learners and 66% of overall non-learners answered 'yes' to the first question as well. These data reveal therefore an interest and an open-mindedness towards learning ancient Greek via a video game.

The following two questions asked respondents to complete a statement by choosing from a number of pre-given options (i.e. useful; fun and useful; useless; fun but useless; a waste of time). To the first statement 'I think learning via a video game is…', most respondents answered 'fun and useful' (70% learners, 79% young teenage learners, 72% non-learners). However, when this statement is compared to the second one (i.e. 'I think learning ancient Greek via a video game is…'), it can be noted that most respondents are indeed convinced that learning via video game is fun and useful, but fewer respondents are convinced that video games can be fun and useful to learn ancient Greek (63% learners, 75% young learners, 60% non-learners). This observation could suggest that ancient Greek is perceived as a subject too difficult (or perhaps too 'serious') to be learnt via video game. That could therefore corroborate Reinhardt's equation (2019, 48) wherein (video)game equals non serious, work/study equals serious. In light of these motives, it seems sensible for research to focus on this equation in order to understand if DGBL could make learners associate ancient Greek with the ideas of 'play' and 'game' and cause an increase of the perception of fun.

The final question of the questionnaire ('In a video game to learn ancient Greek, I'd like to (choose 5 options)…') aimed to understand which activities in a video game to learn ancient Greek would be most appealing to users. The question was modelled on Reinhardt's questionnaire. Below in Figures 1 and 2, the six most commonly selected responses are presented. They are further organised according to involvement type (Reinhardt, 2019, 245), along with hypothesised didactical and learning benefits.

Conclusion

While the concept of a video game taking place within an ancient Greek setting does not represent a novelty (Clare, 2018, 2021; Draycott & Cook, 2022; Sedgwick, 2021), the idea of creating a video game to learn the ancient Greek language and its culture still seems to be missing in academia. The Italian start-up Sirius Game,[8] with the collaboration of the researcher herself, has produced

Most selected feature	Involvement type	Hypothesized didactical benefit
Challenge myself (Selected 120/120 times by learners; 22/28 times by young learners; 60/60 times by non-learners)	Strategic	• Actively using the language • Increase in motivation • Increase in engagement • Increase in interest
Follow interesting stories (Selected 101/120 times by learners; 17/28 times by young learners; 38/60 times by non-learners)	Narrative	• Improvement in vocabulary learning • Reading ancient Greek texts • Practice translation • Improvement in perception of fun/game
Play with friends (Selected 96/120 times by learners; 28/28 times by young learners; 37/60 times by non-learners)	Social	• Increase in motivation • Increase in engagement • Increase in interest • Satisfaction of social component of e-learning • Informal language practice • Peer-teaching • Peer-learning • Improvement in perception of fun/game

Figure 1. The first three most selected features by respondents according to involvement type and hypothetical didactical benefits.

Most selected feature	Involvement type	Hypothesized didactical benefit
Learn new stories (Selected 94/120 times by learners; 13/28 times by young learners; 37/60 times by non-learners)	Narrative/IF	• Improvement in vocabulary learning • Reading ancient Greek texts • Practice translation • Improvement in perception of fun/game
Build a character (Selected 93/120 times by learners; 20/28 times by young learners; 33/60 times by non-learners)	Narrative/IF	• Improvement in vocabulary learning • Reading ancient Greek texts • Practice translation • Improvement in perception of fun/game
Make choices (Selected 86/120 times by learners; 10/28 times by young learners; 31/60 times by non-learners	Strategic/IF	• Improvement in vocabulary learning • Reading ancient Greek texts • Practice translation • Increase in motivation • Increase in engagement • Increase in interest • Sense of autonomy, proactivity • Improvement in perception of fun/game

Figure 2. The second three most selected features by respondents according to involvement type and hypothetical didactical benefits.

during 2023 two video gaming adventures for the study of ancient Greek based on the grammatic-translation method. However, these two adventures are presently available only in Italian. Thanks to the online survey's data, the researcher will develop, during her Ph.D. at Georg-August University of Göttingen (Germany) and Alma Mater Studiorum University of Bologna (Italy), a third adventure in collaboration with Sirius Game which will be available in English and will be based on a combination of different didactical approaches (e.g. grammatic-translation, reading method, Ørberg method). From the experimental data that will be collected, the researcher aims to answer one of her Ph.D's research questions i.e. can DGBL help promoting and motivating the study of ancient Greek in young generations?

Notes

1 However, since the latest comprehensive review is 20 years old, we would benefit for a new look and it would be therefore useful to conduct a new survey worldwide to have a comprehensive look at the more recent situation of ancient Greek teaching.

2 «*Durch Hören und Sprechen lernt man Sprachen nachweislich besser. […] Die active und spielerisch-kreative Verwendung von Sprache macht den Unterricht lebendiger und spricht auch die affective Seite der Lernenden an*» (Kuhlmann, 2012, 51), translation: Through listening and speaking one can demonstrably better learn languages […] The active and playful-creative use of the language makes the lesson more lifeful and also addresses learners' affective side.

3 «τοῦτ᾽ αὐτὸ τοίνυν ἐστὶν ὃ ἀπορῶ καὶ οὐ δύναμαι λαβεῖν ἱκανῶς παρ᾽ ἐμαυτῷ, ἐπιστήμη ὅτι ποτὲ τυγχάνει ὄν» (145e): «Well, it is just this that I am in doubt about and cannot fully grasp by my own efforts—what knowledge really is» (Fowler, 1921).

4 «ἆρ᾽ οὖν δὴ ἔχομεν λέγειν αὐτό; τί φατέ; τίς ἂν ἡμῶν πρῶτος εἴποι; ὁ δὲ ἁμαρτών, καὶ ὃς ἂν ἀεὶ ἁμαρτάνῃ, καθεδεῖται, ὥσπερ φασὶν οἱ παῖδες οἱ σφαιρίζοντες, ὄνος: ὃς δ᾽ ἂν περιγένηται ἀναμάρτητος, βασιλεύσει ἡμῶν καὶ ἐπιτάξει ὅτι ἂν βούληται ἀποκρίνεσθαι. τί σιγᾶτε; οὔ τί που, ὦ Θεόδωρε, ἐγὼ ὑπὸ φιλολογίας ἀγροικίζομαι, προθυμούμενος ἡμᾶς ποιῆσαι διαλέγεσθαι καὶ φίλους τε καὶ προσηγόρους ἀλλήλοις γίγνεσθαι;» (146a): «Can we tell that? What do you say? Who of us will speak first? And he who fails, and whoever fails in turn, shall go and sit down and be donkey, as the children say when they play ball; and whoever gets through without failing shall be our king and shall order us to answer any questions he pleases. Why are you silent? I hope, Theodorus, I am not rude, through my love of discussion and my eagerness to make us converse and show ourselves friends and ready to talk to one another» (Fowler, 1921).

5 The characteristics of the good player-learner are listed and summarized by Pavlou (2020).

6 The revision of the English version has been made by an American native speaker, while the Italian version has been reviewed by the researcher herself (Italian native speaker) and other Italian native speaker scholars and professors who have accepted to take part in the revision.

7 Given the fact that the researcher is from Italy and has studied there, a higher number of completed questionnaires was received from Italy.

8 https://siriusgame.it/

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