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Video Games as an Educational Resource for the Bilingual Classroom

Gabriel Gutiérrez Díaz

Tutor: María del Rosario Neira Piñeiro

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INDEX

1. INTRODUCTION

In today's society, known as "digital society", video games have shown to have numerous possibilities in different fields of study, far from the nickname of leisure elements oriented to entertainment. On the contrary, video games can serve as a support for language learners since they increase the exposure time in an entertaining and motivating way, promoting the development of specific skills and abilities as well as representing a new and innovative field. Therefore, the connection between games and learning exists, it is necessary to find a way to select them correctly and adapt them to the educational objectives, without forgetting the existence of limits of use, as with any educational program. It should be noted that although video games they are used in some classrooms, the opportunities they offer are not fully exploited, which can be due to the unawareness of their operation or the time it takes for their implementation by teachers.

In the same way, to use this type of recreational resources in the bilingual classroom, it is necessary to previously select video games that are appropriate for the age and for the educational objectives pursued. Therefore, it is of special interest to carry out an analysis of existing video games at the present time to determine their suitability for the CLIL environment.

This master thesis aims to analyse, through the creation of an *ad hoc* instrument called VG-10 a sample of video games, to determine their suitability for teaching with a CLIL methodology in Primary Education. Another objective is to determine if in the current market there are enough video games suitable for the bilingual classroom.

The structure of the master thesis begins with a theoretical framework, where topics related to CLIL principles, video games and their classification are addressed, in addition to the effects of their integration as an educational resource both in the traditional classroom and in the bilingual classroom. Next, the research carried out is developed/presented, with the sections referring to the hypothesis and objective of the study, methodology used, sample, instrument, results, analysis and discussion. Finally, conclusions are included, followed by references and annexes.

2. THEORICAL FRAMEWORK

2.1.   CLIL Principles

In accordance with the established by the European Framework, CLIL (Content and Language Integrated Learning) is described as: "A dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language" (Mehisto et al. 2008 p. 9).

Another of the peculiarities that CLIL constitutes is the one referring to the breadth of the concept, considered as an umbrella term because of the numerous educational approaches that involves. Thus, immersion programs, bilingual or multilingual education, among others, have their place and relevance within the methodology.

In addition, in this teaching process, information and communication technologies (ICT) can become a beneficial and effective resource in bringing bilingual programs closer to both students and teachers. This implies the provision and knowledge of the various tools and resources available by teachers, thus facilitating the learning process for their students through an interactive methodology.

The fundamental principles that govern the methodology are offered by Do Coyle (2006), namely the 4Cs Framework (Coyle, 2006):

- *Content:* considered the backbone of the learning process, it refers to the subject matter, having a transversal character and being linguistically adapted.
- *Communication:* it implies a significant interaction and mastery of the language, with the purpose of directing the individual towards the construction of quality learning, and thus help create content that students can understand.
- *Culture:* it involves the development of the student in the field of interculturality, with the aim of becoming a citizen in the real world, becoming more sociable and emotionally aware.
- *Cognition:* this notion integrates all the learning and reasoning processes involved in the process, which should be a cognitive challenge for students.

This approach aims to allow the student to observe the reality of their learning, reasoning and analysing in an active way, going beyond the acquisition and memorization of the contents. This dual focus of action involves the simultaneous learning of components and implies that the objectives related to the content are supported by the language's own goals: the individual, in his desire to understand and manage the content, finds the motivation for language learning. Motivation is an extremely important point enhanced by feedback with teachers. According to Meyer (2010), motivation increases once students understand how to proceed and which phrases to use to carry out a specific learning task based on the description, interpretation and corresponding analysis.

CLIL also highlights the fundamental presence of a third component: learning skills, which train the individual to build his or her own learning in the most efficient way possible. All this is linked to the cooperative work, exploratory talk and the use of ICT tools, based on the concept of scaffolding, a relevant aspect in this methodology, where the student builds his or her knowledge from the existing base with the teacher as facilitator, being an essential part of the planning and teaching process, being able to reduce its intensity as the linguistic abilities of the students advance. According to Gudjons (2007) the key to optimal learning lies in the balance of the activities directed by both, teacher and students, and the motivation and scaffolding provided under this type of methodology.

Using a CLIL methodology has a great number of benefits:

- *Cognitive benefits:* it develops a series of attitudes and skills that enable students to build their own learning, favouring critical thinking, motivation and confidence in the language and the subject, in addition to promoting multilingual interests and attitudes. Sedeño (2010) states that, depending on the genre, video games, in addition to favouring reasoning, promote reflection, concentration, the development of mental calculation and creativity.
- *Linguistic benefits:* it develops intercultural communication skills and improves language competence, allowing students a greater contact with the target language. Coyle et al. (2010) point out that CLIL aims to promote communicative situations in which the language acquisition process occurs unconsciously.

- *Pedagogical benefits:* it provides opportunities to study content through different perspectives, methods and forms of practice in the classroom, complementing other subjects without requiring additional teaching hours.

It is worth highlighting the role of culture in the methodology and its link with the language. Brown (1994) evidenced the relationship between both concepts, stating that culture finds its expression and reflection in the language, so that both interact constantly. Starting from the idea that culture determines the way we interpret the world, CLIL intends to intrude into the classroom as a channel through which interculturality flows, offering opportunities that would not be obtained in monolingual educational contexts, and enriching learning.

2.2. Video Games

Video games are a notable part of the lives of the younger generations and a good part of the recreational activities at home. In addition, the massive technologization of today's society suggests that it is almost impossible to contemplate modern life without the use of resources or technological products, thus generating adhesion in children, youth and adults.

The videogame industry is growing exponentially and is currently experiencing its great moment of glory, to such an extent that video games have caused changes and transformed social and cultural relations linked to new technologies, leading to new media. Balaguer (2002) points out that videogames have ceased to be a mere form of entertainment to be transformed into a form of cultural expression at the end of the 20th century. However, this resurgence comes not only from the development produced by technologies, but also from the stories that within them give different themes and areas in which the player's imagination is enhanced, among many other aspects.

Trying to make or choose a definition of video games is a complex task. Ferrer (2018) define video games as " platforms designed for entertainment that largely satisfy individual needs in terms of leisure, and also offer enormous potential for developing

training activities, in the opinion of many authors, both in the academic and professional fields." (p. 193).

Yuste (2012) points out a series of characteristics of video games related to certain skills that can be generated with their use, such as interactivity, a fundamental aspect, since it allows the player to integrate and commit to the development of the story proposed in the game. The significance coupled with the player's own interests and the capacity for individualization to enhance personal skills, as well as the self-regulation of various processes and strategies exposed in the video game.

Within this interactivity, there is the immersive capacity of video games, another of its main characteristics, which is possible thanks to the visual and sound information it provides to the player. It is for this reason that Maldonado (2020), points to the soundscape as one of the key elements to capture the player's attention, not as much as its graphic design. In other words, it is one of the hallmarks of a video game, even helping to enhance the understanding of the story and make the experience complete.

Linked to this idea, it is important to point out that there are certain types of games in which when the player presses a key, the experience is discovered as an authentic recharged fantasy. For this reason, video games begin to be enjoyed with the passing of the hours and the handling, let us say, playing each time better, it is enjoyed with a much more pleasant sensation while learning in another way. Playing them can provide a lot of fun, but playing well, mastering the proposal to a good extent, can be extraordinary. Although it is moderately difficult to define exactly what the "game feel" is and implies, the term was popularized by the book *Game Feel: A Game Designer's Guide to Virtual Sensation* written by Steve Swink in 2008. It is true that the terminology itself is already quite illustrative, but it is important to keep in mind that this, let us call it playable sensation, is the concrete emotion that we live in a video game being abstract and intangible enough to affirm that it is something tremendously particular and subjective. The term has become increasingly popular and spreading over the years, and several terminological references have even appeared that help to understand its meanings in a somewhat more descriptive way. But even so, within that certain imprecision so typical, the theory or an attempt at explanation such as the one I am trying to do may remain a bit concise. That is why I think that the advantage of being something

associated with video games is the possibility of appealing to the audio-visual. That is, this immersion can develop ways related to the audio-visual, the game space and its forms of interaction, aimed at eliminating barriers between game and player.

2.3. Classification

As video games have evolved along with society and although some of them are aimed at a child and / or youth audience, doubts have been raised about their suitability for minors, in such a way that today there are some issues that, although considered only for adults, they are present in our daily lives, such as sex, violence or drug use. From this problem arose the idea of classifying them according to a series of criteria, in order to avoid a negative or erroneous effect on children and adolescents.

The Pan-European Game Information (2003) https://pegi.info/es, PEGI classification system is an organization that aims to provide information on the content of videogames, in addition to classifying them by age ranges so that they are given proper use. Its main objective, therefore, is very much aimed at helping adults in general, who are normally the main facilitators of videogames among minors. The PEGI system has a formalized operation in 38 of the 49 countries that make up the European territory and entered practice on April 9, 2003, with a growing and expanding market. To date, there is a database of more than 30,000 videogames catalogued among the different platforms available, and although it is widely internalized by the developer studios, it is not a system installed in a mandatory manner. Participation to obtain the label is completely voluntary and responds to the interest of the creators. But the truth is that obtaining a catalogue is extremely simple and intuitive based on two classification procedures that respond to the different business models that are sought in a video game. The first includes all the copies distributed by what is known as traditional methods, such as physical distribution, for example and that reach consoles such as Xbox, Play Station or Nintendo and a large majority of copies destined for PC. The second has to do with digital distribution and although in both cases it is a very conscientious task, the procedure is relatively similar. Editors fill out what is called an evaluation form

to obtain provisional content and age descriptors. Later, the PEGI administrations intervene to carry out an optimal review of the product.

Besides, NICAM (Netherlands Institute for the Classification of Audio-visual Media) https://nicam.nl/en is in charge of videogames that carry a classification by ages between 3 and 7 and, on the other, VSC Rating Board is in charge of labelling that passes through ratings 12, 16 and 18. However, the digital market has grown so overwhelmingly fast both in conventional consoles and in portable devices, tablets and mobile telephony that in 2015 the IART International Age Rating Coalition began to apply, with the aim of ensuring correct administration of labelling in services like Google Play, Windows store and Oculus Store.

From all this, it is interesting to note that these organizations work in parallel to facilitate the labelling of PEGI and that the process to obtain it, in addition to being simple and intuitive, as I said before, is completely free. As we have already seen, the descriptors are divided into two: on the one hand, those referring to age ranges, supported by a colour code, 3 and 7 in green, PEGI 12 and 16 in orange and PEGI 18 in red. And on the other, those concerning the description of the content with explicit icons that represent the appearance of violence, foul language, content capable of frightening or frightening, the intention of gambling, the appearance of sex, drugs or discrimination, and from at the end of 2018 a new descriptor that indicates the option to make additional purchases within a video game.

However, it would be considered that the PEGI values and considers the suitability of a video game, but not its level of difficulty, thus a game with a PEGI 3 or PEGI 7 does not have inappropriate content for that range of age, but it can be mechanically overly complex for the little ones and vice versa. A PEGI 18 game can be easily manageable but includes explicit content that is very inappropriate for minors. In this regard, in order to obtain the largest volume of information possible, it is interesting, for example, to resort to the variety of the specialized press in search of analyses and criticisms that shed light on aspects that the PEGI does not contemplate. Finally, I would like to emphasize that labelling is a great help for making responsible purchases and for learning more about the specific role of a video game. It is not even necessary to go to a physical establishment to check the descriptors that have been granted in a title. It is possible,

for example, make a query through the agency's own website, and there is even an application for tablets and mobile phones that can be downloaded through Google Play and the Apple Store called *PEGI Ratings*. It costs little to know in more detail what we are buying and the PEGI is there for that, to facilitate video game choices according to a labelling reviewed by experts from various branches derived from the health sciences such as psychologists or educators. I think it is interesting to be aware that they exist, not only because there is a detailed work behind it, but because they serve their purpose with enormous utility.

In addition to this great help, we can also group them according to the different existing genres, such as in movies or books, that is, according to the type of experience that the player is going to live through them. Pascual and Ortega (2007, as cited in Pérez, 2014, pp. 141) classify video games as:

- *Action games:* they are those that involve visual-motor coordination to advance through levels in which the player constantly interacts with the available resources.
- *Adventure games:* it is a genre characterized by research and exploration of the environment that focus the action on a story or plot with its respective outcome. That is, this video games present elements of eminently narrative media such as movies or literature.
- *Strategy games:* they are those where the player puts into practice the analysis, reasoning and resolution of problems or situations to achieve the proposed objectives and thus advance in the game.
- *Simulation games:* they are those that make available to the player a scenario or situation that tries to recreate real life situations to build and develop the action.
- *Sports games:* they are a genre characterized by emulating sporting events that are governed by a series of rules to be met and mainly to play in multiplayer. Those with which real physical exercise is practiced through a series of devices can also be added.

- *Race games:* they are those whose main objective is based on controlling a vehicle and travelling a distance along a certain section or track using the joystick or similar peripheral.

Each of these genres contains notable differences, therefore, depending on the educational objectives and the field of knowledge. Besides, from an educational point of view, some genres may be more suitable than others.

2.4. Video Games as an Education Resource

Today, there is a constant change in the field of education, and the introduction of information and communication technologies (ICT) is part of this transformation. The current generation of children use much social networks, are fully connected, they share everything. For this reason, it is important to emphasize that computing is like the new Latin, because it is the basis of the digital world, like Latin was the basis of the analog world. It is crucial teaching children how to think, how to solve problems and how to be great communicators, as these skills will apply to whatever challenges they may encounter in the future. Digital education is not just about coding, programming computers or creating things. It is about the way of thinking, and computational thinking allows multiple solutions to a problem, and for this one must innovate. The concept of innovation can be described as the successful exploitation of new ideas. And the school is a perfect setting in constant transformation where new technologies acquire a special role, but at the same time and as an educational instrument they pose a challenge to the established. But every effort has its reward, Albert Einstein once said: "If you want different results, you have to try different approaches."

This is how, from the nineties, the panorama around videogames began to take a transcendental turn and focused on the positive effects that they promote. They begin to be considered not only as instruments of mere entertainment, but as driving vehicles for learning and cognitive abilities, as catalysts for learning processes and as learning contexts in themselves (Olson, 2010). Hence, Gros (2009) introduces the concept of serious video games, which "aim to use the advantages that videogames provide, but whose main objective is not entertainment but learning." (pp. 15-16). Serious video

games do not seek to replace the traditional class, but to work in a different and efficient way to acquire the content and skills that they want to teach.

Play, which is the natural way of communicating for children, generates curiosity, allows them to experiment, to test and to make mistakes without fear of being judged while generating pleasure and can activate the brain's reward systems, in such a way that "playing implies trying to understand how things work" (Piaget et al., 1982). The study of games implies the study of the act of playing (Myers, 1999) and the act of playing in the children is a pleasant way to interact with objects and their own ideas. Hence, the use of new technologies is a resource that allows you to play differently while learning. So, it would be very smart to introduce video games in classrooms and our homes as a method of learning. But obtaining benefits from video games requires a bit of concern and knowledge of its content, so its use will depend on the motivation and support received from the teacher.

From this point on, we find the concept of *gamification*, defined by Hamari et al. (2014) as "a process of enhancing services with motivational affordances in order to invoke gameful experiences and further behavioural outcomes" (p. 3026). This leads us to a first benefit of the use of video games: motivation, which is a fundamental and necessary element to guarantee learning, because when a student is motivated, effectiveness increases. To be motivate, the player must face problems to which he must seek a solution. In a video game, for example, if the player makes a mistake, the game encourages him or her to continue, that is, the problems must have several solutions. This is important since video games constitute a means that requires the involvement and attention of the player so that the rhythm and progress of the story progressively occurs both in difficulty and in learning. According to Casañ (2017), its use helps students to reduce the wide content of study, repetitive activities and problem solving, creating a playful and attractive environment, and even facilitating the action of teachers. All this linked to gamification, being an area treated as a game, and in this sense, video games are the most appropriate method for this. Besides, Thomson (2010) maintains that the use of video games from the initial stages implies the simultaneous presence of visual, auditory and kinaesthetic information, favouring memory as it is a multisensory resource.

Serious video games, mentioned above, given their high educational potential, can be an ideal transmitter for the development of multiple intelligences described by Gardner (2005), as they are provided with multisensory components:

- Linguistic intelligence can be developed with those video games that involve description, narration, communication and drawing conclusions.
- The logical-mathematical intelligence can be enhanced with video games of mental training, calculation and mathematical puzzles.
- Bodily-Kinaesthetic intelligence is promoted with those video games that simulate sports practices with the achievement of the improvement of motor skills. Most of them provided with an additional control with which to perform body movements.
- Spatial intelligence is enhanced with video games of high immersion capacity and graphic quality, offering positive cognitive effects related to memory.
- Naturalistic intelligence is developed with video games based on experimentation, understanding and respect for nature.
- Musical intelligence, this intelligence is usually developed in most video games if we focus on their soundtracks, although there are some more specific ones based on instrument simulators or karaoke.
- Interpersonal intelligence can be fostered with ethical social simulation video games. These can even help players or people at risk (Greitmeyer and Osswald 2010).
- Intrapersonal intelligence, with all those video games that promote self-improvement.

Together with this idea, Del Moral and Fernández (2015) carried out a study to analyse to what extent the use of innovative practices based on new technologies and their variables contribute to the development of multiple intelligences in a school context. As a result, they obtained that the attitudes registered by the students were incredibly positive, contributing to promote a collaborative, receptive and highly motivating learning climate. On the part of the teaching staff, their predisposition for the use of this type of innovative experiences was highlighted. Even so, they appeal to the need to

disseminate and carry out more research that shows even more positive results in the development of multiple intelligences and the monitoring of students' progress with the use of video games or new technologies to make them reach more schools.

But, both inside and outside the educational field we can find other types of barriers or disadvantages related to the different behaviours that a video game can generate. For this reason, there are researchers who indicate that they can be harmful, especially for the health of children and adolescents, because they are highly interactive resources, allowing user immersion. The Pediatrics Clinic Department of Navarra University (2020) *https://cutt.ly/OmjzaW2* also points out some of the negative effects due to misuse. Among the detrimental effects is gambling, in which the player is obsessive, has lost control over the game and resorts to lies to continue playing. Individualism is also named, in which it takes precedence over other activities such as sports, reading or peer contact, which leads to partial or total isolation, as well as the loss of the notion of reality.

On the other hand, the subject of violent video games is one of the main topics in the literature on the study of the effects of this type of game on behaviour. This can lead to personality problems, by introducing behavioural guidelines at a time when the child is forming as a person, aggressive behaviours and demeaning others and a limitation of creativity and imagination. However, there are authors like Adachi and Willoughby (2011) who see this idea linked more to a relationship between playing time and competition as a trigger for violence, than violent games themselves.

Despite this, it is also proven that the use of video games can lead to health problems with excessive use of them. Some of these most common disorders are headaches, eye irritation, and muscle aches due to poor posture, all linked to excessive play time. Despite the inconveniences that they can generate, it is considered that their advantages outweigh the disadvantages, if these are treated in the correct way both inside and outside the classroom, the figure of the teacher being fundamental as a turning point in terms of to the consumption of educational video games and everything.

2.5.   Integration of Video Games in the Classroom

Despite the spectacular rise of the video game industry and the great benefits they offer, "a large part of educational systems continues to resist the systematic use of interactive entertainment platforms in curricular developments, turning a deaf ear to their enormous creative possibilities, and didactics" (Pérez, 2014, p.135). All this implies a structural change that directly affects the selection and implementation of educational objectives, content, skills and methodological strategies that must be developed in the classroom for the acquisition of active knowledge.

One possible cause of this situation is the poor training of teachers in the basic skills, necessary for the effective use of video games in the classroom. Obtaining benefits requires constant concern and sufficient knowledge of their content to be able to see them from a critical point of view so that students can distinguish between fact and fiction. Not all teachers have been able to decipher the opportunities they offer for the teaching and learning process. Therefore, here we find one of the main difficulties or negative points when working with this type of resources, since the teacher himself is the main responsible for facilitating the integration of video games in the classroom in a correct way. And for this, the ability to know how to identify the different ideal elements is required to select or create a video game capable of producing those long-awaited positive results. Marqués (2001) talks about two fundamental premises for this theory to work when designing an educational intervention: searching and selecting resources seeking maximum efficiency and reflecting on each of the elements present in it to guarantee an optimal connection. It could be said that the resource alone is not functional, since the decision-making linked to pedagogical planning is what guides the entire educational process.

Linked to this, and to guide teachers with respect to this issue, there are various authors who made available a series of help tools for the evaluation, design and selection of video games applicable to the classroom in order to facilitate their integration and use both curricular as didactic, being able to serve as a starting point. Villalustre and Del Moral (2012), within their instrument, list three specific dimensions for the evaluation and exhaustive selection of educational video games. In the first place, the

morphosyntactic and aesthetic dimension is discussed, in which aspects related to the aesthetics and attractiveness of the video game are related, creating that connection with the user, together with the narrative structure. In addition, everything concerning the aesthetic section is considered, that is, cinematographic resources, animations and setting, reinforcing the player's feelings and emotions. Secondly, they analyse of the ethical dimension, where only all those video games in which their characters transmit positive values and messages will be valued and included, which contribute to the formation of the student as a person, distancing them from stereotypes and countervalues that deform reality. Finally, they refer to the educational dimension. This third part is completely interrelated with the two previous points, so if it has been put to good use, it will be easier to select the correct video game that responds to educational learning. For this reason, it is important to focus on the objectives and analyse the theme on which it is based, to later make a relationship between basic competencies and skills that can be enhanced when putting them into practice in the classroom.

Once the video game has been selected, it is important to design and plan the educational intervention. Yuste (2012) points out a series of functions that the teacher must consider when putting it into practice in the classroom with their students. The first thing to do will be to decide what number of students will be assigned to and what type of group will be formed, either individually, in pairs or in groups. Another aspect to consider is the type of didactic strategy, which can be directed, guided or free discovery, and even varied as the video game progresses or depending on the skill level of the students according to its continuity. In addition to this, he points out the importance of correctly choosing the duration and space in which the activity will take place, an aspect that often goes unnoticed but is truly relevant. Finally, the most central or relevant part of the design and planning of the intervention is related to the teaching practices linked to the strategies or functions that arouse motivation and interest in students. All this based on a series of contents capable of facilitating learning through experimentation, training and of course entertainment, where at the end they can make their self-evaluation of what they have learned and the game itself to look for certain

improvements when it comes to addressing the next session or activity using new technologies, in this case video games.

2.6.   Video Games as an Education Resource in the Bilingual Classroom

Various investigations show the usefulness of video games as a resource for learning foreign languages. Even so, there are different opinions about whether it is the best way to learn a second language and respond to the objectives, since both in the market and on the Internet, there is a great variety of video games and not all of them are suitable for this purpose.

According to Casañ (2017), a video game cannot be understood as such without the playful factor it possesses. But it also depends a lot on the way of playing, even on the educational purpose and the field of knowledge, with some genres being more suitable than others. Casañ (2017) focuses on the possibility of gamifying content and integrated language learning, as well as providing teachers with possibilities and alternatives to create multimedia content that are effective and not difficult to carry out in the classroom.

From another perspective, but with the same idea, Uuskoski (2011) began to investigate and designed a questionnaire with which he discovered that those who played video games and surfed the Internet in English, obtained better grades than other children. This is due to the great variety and interaction with the user, and the appearance of stimulating images to support the understanding of the language. Therefore, he assumes that playing video games is not a waste of time, but an important factor when learning a second language, always linked to motivation. Of course, without forgetting the possible adversities mentioned above if the time spent is not controlled it could even become addictive.

Otherwise, Sánchez (2014), through his research and his idea that we all have the predisposition or ability to learn a language, tried to analyse the impact of video games as a virtual playful strategy for learning English and evidenced through the results obtained that the use of video games in the classroom favours the development of

various digital skills and, more importantly, language skills in the second language. All this was supported by the technique of observation towards the students and the interviews carried out, where 95% of the respondents considered that it was a simpler task than the traditional way of teaching. From there, he realized that the selection and type of activity to be carried out is essential to learn a language in a positive way, allowing the students to be energized and motivated, trying to introduce them to that spirit of investigation and enthusiasm for learning. As Uuskoski says: "In an increasingly English world, the possibilities are limitless; we just have to find the best way to use them" (2011, p.58). In addition, the use of video games allowed the player, in this case the students, to access an unknown vocabulary in an interactive way and at the same time strengthen reading and writing skills in a positive way. But he also emphasizes that all the above must be put into practice by a teacher willing to try to change his methodology and innovate with the students, strengthening the relationship between the two.

As explained above, the teaching of language and content using video games is a real pedagogical possibility enhanced by the playful dimension they have. But it should be noted that there are few studies related to the CLIL methodology and the use of video games for learning English, hence the novelty of this TFM. Still, it is possible to justify that connection and its applicable benefits in the bilingual classroom.

Working with educational video games under a CLIL methodology can contributes to favour the acquisition of its four competences or principles:

In the first place, the principle referring to content is related to the subject, cross-sectional and linguistically adapted. And with the use of video games competition highly enhanced, since there are multiple options to choose from to treat a certain type of content curriculum, always according to the established category of the game and the age at which it is intended. For example, there are video games focused on sports, science, history games … all of them based on the concept of scaffolding where the student builds his knowledge from the existing base with the teacher as a facilitator during the process, thanks to the fact that they provide all kinds of information appropriate and understandable about the chosen topic. For example, Gómez et al. (2018) show the application of video games for learning curricular content related to

physical education. They argue that current video games have evolved in such a way that in some of them the control has been replaced by body movement to promote the development of motor skills and thus work this curricular area. But they also state that for video games to be used as curricular material, it must have a pedagogical approach with clear objectives and utility.

The principle of communication is closely related to the ability to use language, so having a communicative competence implies mastering the four language skills: speaking, listening, reading and writing, all of them in an integral way. These skills are enhanced using the appropriate video game, since most of them include the verbal code together with other semiotic signs and allow language levels to be adapted to the destinations, in part thanks to the help of simple and detailed in-game tutorials that require the use of oral or written language during the game. According to Casañ (2017), video games would increase exposure time to language and content in a more entertaining way in the classroom and would also provide more opportunities for practice. In addition, its high capacity for interaction allows the player to favour immersion within the story, promoting bilingual interaction and the multilingual combination of expressive resources based on the options of written or spoken chat through the use of headphones and a microphone. According to Coyle et al. (2010) CLIL aims to promote communicative situations in which the language acquisition process occurs unconsciously. All this together with the learning of new vocabulary and the specific use of the first language serves to guide the individual towards the construction of quality learning.

Starting from the idea that culture determines the way in which we interpret the world, in a CLIL methodology this principle refers to the development of the student in the field of interculturality with the aim of becoming a citizen of the real world, also getting to treat with the use of video games. All this depends on their subject and, especially with the so-called multidisciplinarity, where it is possible to work all kinds of curricular content selected by the teacher or by the students themselves through the flipped classroom method. For this reason, it also promotes respect for other cultures and transmits positive values under a suitable educational environment while favouring cooperative work. To justify this idea, Roque (2018) carried out an analysis of a video

game called Porto (IDECA, 2017), based on the idea of creating a space for interaction between the cultural and artistic heritage of the city. After the analysis, he got positive results and feelings about it. One of the main benefits, in addition to the wide possibility of interacting with its available resources throughout its twenty missions, is that it offers the player a high degree of learning about both aesthetic and behavioural cultural elements of the city of Porto and his story. Therefore, it can be said that video games and culture go hand in hand.

Finally, the principle of cognition is one of the most enhanced thanks to the use of educational video games since they integrate all the learning and reasoning processes. In the first place, each game presents a series of challenges to be solved, offering various solutions to the problem using available resources, so the player must activate their analysis and mental reasoning to try to successfully move to the next level or screen of the game. Sedeño (2010), points out some of the benefits of video games related to cognitive abilities. He states that, depending on the genre, video games, in addition to favouring reasoning, promote reflection, concentration, the development of mental calculation and creativity. All this is coupled with social skills or abilities, that is, with culture as discussed above. This reinforces success and promotes the student's commitment to continue playing, learning content and creating their own learning in the most efficient way possible while their level of English improves exponentially.

Due to the scarcity of specific research on the use of video games in the bilingual classroom, the creation of an instrument to evaluate their validity can be an interesting resource for this context, for the reasons explained above.

3. RESEARCH

It is necessary to emphasize the need for and importance of having certain criteria to select suitable video games, since not all are necessarily appropriate for this purpose. Therefore, it is necessary to point out that the research starts from the deficiencies detected in the research on video games and CLIL and focuses on the study of video games as resources for this context.

3.1. Hypothesis and Aim of the Study

The main hypothesis of this study is that there enough video games suitable for the CLIL classroom on the market.

The aim of this research is to analyse a sample of educational videogames and determine their pedagogical suitability as resources for bilingual education in Primary education.

Another objective is to determine if in the current market there are enough video games suitable for the bilingual classroom.

3.2. Methodology

The research is based on the analysis of a sample of video games aimed at students between 6 and 12 years, in order to verify if they are suitable resources for the CLIIL classroom.

The methodology adopted to address the proposed objective is qualitative, that is, it is based on the collection of non-numerical data using the content analysis technique to reach a conclusion.

3.3.   Sample

A sample of 10 video games was selected. As a preliminary search, the review of web pages and articles has been used, as well as video game analysis and specialised websites, including the official.

All videogames have been selected according to a series of criteria, mainly aimed at a young audience and students of the primary education stage, which have been created for no more than ten years, available on a variety of devices or platforms in addition to being currently available on the market. The videogames have an accessible level both in gameplay as in idiom, and it should be noted that absolutely all of them have the option of selecting the language in English and they address contents of the primary education curriculum.

Otherwise, all those video games not recommended for minors because of their violent nature or disproportionate action, creating negative overstimulation and mainly with the absence of topics of educational interest have been excluded.

Finally, the following video games have been selected:

− *Minecraft Education Edition* is a multiplatform video game with its own online educational community, where different content is dealt with depending on the needs through a motivating and continuously active environment based on a world of cubes. In addition, the game has an explicit educational intention, being directed to the learning of all kinds and curricular contents. The aim of the game is to build everything you can imagine based on cubes. https://education.minecraft.net/

− *Simple Machines* is a game focused on the theory of trial and error where players must put together different pieces and thus create tools to overcome the levels related to basic physical concepts. The aim of the game is to use the various objects available to complete the different levels. https://cutt.ly/DmhrIAM

− *Letter Quest* is a two-dimensional multi-screen video game where to move forward you must find the correct word that can fit into the context of the situation that occurs. The aim of the game is to find the correct word that can fit the context of the situation at hand and advance the story. https://www.letterquestgame.com/

- *The Sims* is one of the best-selling social simulation video games in the world where you learn to live in community through a virtual life simulator. The aim of the game is to manage a character and do all kinds of daily activities with one or more people online. https://www.ea.com/es-es/games/the-sims

- *Super Lucky's Tale* is a platform game based on mathematics where the user's skills are put to the test through different challenges and colourful minigames. The aim of the game is to complete the story in which the character is involved to restore peace to his home. https://cutt.ly/PmhrEnE

- *No man's sky* is a first-person graphic adventure with which we can travel and explore infinite planets in an unknown universe and write down information about them and then share it with other players or travellers. The aim of the game is to find life on other planets by traveling through a spaceship. https://www.nomanssky.com/?cli_action=1620668490.255

- *Just dance* is the most popular virtual dance game whose objective is to develop cooperation and practice physical exercise while learning the lyrics of the available songs. The aim of the game is to dance and obtain a higher score than the opponent. https://www.ubisoft.com/en-us/game/just-dance/2021

- *Flippy's Tesla* is a virtual reality game whose main objective is to awaken curiosity about the world of science in children in a completely different way. The aim of the game is to help some scientists solve a series of strange events that threaten to make all knowledge disappear. https://cutt.ly/0mhrV3R

- *Who wants to be a millionaire?* is a video game based on the popular television show. The main objective is to correctly answer a series of questions to reach the prize of one million euros. https://cutt.ly/QmhrSqj

- *Sim City* is a simulation game with its own online community, even for teachers, in which students must create and manage a city by working on different science concepts. The main objective of the game is to create a sustainable city from scratch. https://www.ea.com/es-es/games/simcity/simcity

Below (table 1) the technical data of the selected video games are collected, obtained from the official web pages and other sources or websites related to the field.

Table 1

Technical data of the selected video games

Name	Company	Year	Category	Aim	PEGI	Platform
Minecraft Education Edition	Mojang	2016	Adventure strategy	Build and learn	3	PC
Simple Machines	MOSAI	2010	Strategy	Discover physical laws	7	PC
Letter Quest	Bacon Bandit	2015	Strategy	Word formation	3	Multi
The Sims	Electronic Arts	2014	Simulation	Live in community	12	PC
Super Lucky's Tale	Playful	2017	Adventure	Complete the story	3	Multi
No man's Sky	Hello Games	2016	Adventure	Discover life in other places	7	Multi
Just Dance	UbiSoft	2021	Sport	Dance and learn the lyrics	7	Ps4, Wii, Xbox
Flippy,s Tesla	Animatoon Studio	2017	Adventure	Discover science	3	Ps4 VR
Who wants to be a millionaire?	Microids	2020	Quiz	Answer correctly	3	Ps4, Xbox, Nintendo
Sim City	Electronic Arts	2014	Simulation strategy	Build and plan a city	7	PC

Source: self-made.

3.4.   Tool

To carry out the analysis, it was necessary to design an *ad hoc* instrument called VG-10 composed of a series of dimensions (adaptability, interactivity, language, learning, problem solving and education in values). Since no research has been found on video game analysis for the bilingual classroom, other research and video game analysis instruments and applications with similar objectives have been taken as a reference (Del Moral et al. 2015; Del Moral et al. 2018; Martínez et al. 2018). All these studies intend to analyse the existing relationships of videogames with learning, development and acquisition of competences and abilities from an educational point of view.

Considering the application of video games to the bilingual classroom, the dimensions of language, learning and problem solving have been added, in which the aspects related to the CLIL methodology will be evaluated. This instrument was validated using the expert judge method, being an important part of the information when experimental observations are limited. In this case, three experts in the educational area related to the CLIL methodology participated in it, all of them lecturers from the University of Oviedo. An email was sent to them where the objective of the instrument was explained along with a table with the items, and other specifications, in order to contextualize them in the process. After the pertinent observations, the instrument was reformulated by means of certain adjustments. Finally, a complete and better structured instrument was obtained with which to efficiently subtract all the information relevant to the proposed topic.

So, the final instrument (appendix) is made up of 6 dimensions with their respective sections or items, where each of the mentioned videogames will be evaluated using a Likert scale. Being a psychometric scale, it values groups of items and ranges of values. These ranges are divided into four (1- not at all, 2- a little, 3- quite, 4- a lot), thus facilitating the analysis of the data previously linked to the different safe and reliable items. Also, in all dimensions, a section entitled "Additional comments" is added to collect relevant complementary information that is not reflected in the items.

Dimensions to evaluate:

- *Adaptability:* where it is analysed how the video game adapts to the user both in terms of the playable level of difficulty and that of English, in addition to evaluating other types of aids or options to facilitate this adaptation and thus achieve adequate progress during their practice.

- *Interactivity:* this dimension refers to the different forms of interaction that the video game has, aimed at eliminating barriers between game and player, making it not only a different way of learning, but also of having fun. This dimension is linked to the term "game feel", which, together with interactivity, tries to explain a series of emotions formed, creating a unique experience (Swink, 2008).

- *Language:* this dimension is one of the main to highlight since it is the centre of the research, that is, to analyse the variety of linguistic codes, whether written, oral or visual, of the English foreign language that are found in the video game and that help their learning and content.

- *Content learning:* it focuses on the learning itself, that is, it considers the contribution to learning that the video game has about the curricular content in addition to the cognitive benefits focused on the concept of scaffolding and focused on a CLIL methodology.

- *Problem solving:* dimension destined to the analysis of the video game in terms of aspects and techniques related to cognitive development and thus reasoning and analysing in an active way to solve the problems that the user encounters during the development of the plot.

- *Values education:* this is a transcendental dimension, which analyses all those values that the video game transmits to the user along with the discovery and acceptance of different cultures. Point belonging to one of the four principles the CLIL methodology with the aim of becoming a citizen in the real world.

3.5.   Results

First, the overall results obtained will be presented. This part will be followed by the individual analysis of each video game.

3.5.1. General Analysis

Table 2

Adaptability Dimension

1. Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.	0	20	60	20
1.2. It adapts to different language levels.	0	70	20	10
1.3. It offers tutorials or help.	0	0	20	80
1.4. It allows to see the progress in the game.	0	40	40	20

Source: self-made.

Considering the data presented in the first table (table 2), it can be said that most video games adapt quite or a lot to different levels of playable difficulty with 80%, but the percentage drops to 70% when we talk about little adaptation to the game. language level, in this case English. This is because most video games have a predetermined language level without allowing for variations. Only 30% allow some adaptation of the required language level. Still, 80% own and offer a lot of tutorials, which helps make up for that low percentage. Referring to the last point, most video games with 60% can show the progress that the player is making throughout their development.

Interactivity Dimension

2. Dimension (ID)		1	2	3	4
2.1.	It favours the immersion inside the story.	0	20	60	20
2.2.	It allows to explore the versatility of resources.	0	10	20	70
2.3.	It provides feedback on the actions taken.	0	0	70	20
2.4.	It encourages resource design.	0	30	30	40
2.5.	It proposes interesting and motivating challenges.	0	30	60	10
2.6.	It promotes engagement.	0	0	90	10

Source: self-made.

The second table (table 3) shows that 60% of video games greatly favour immersion within the story, making it more entertaining, a determining factor for learning. Together with this item, it can be seen that 70% also allows to explore the different resources available throughout the game to the maximum with their respective feedback. In addition, 70% propose many and varied motivating challenges for the player. However, 30% of them offer few or limited challenges, which limits their potential in terms of interactivity.

Table 4

Language Dimension

3. Dimension (LaD)		1	2	3	4
3.1.	It includes variety of codes written, oral and visual.	0	0	30	70
3.2.	It provides appropriate vocabulary codes.	0	0	60	40
3.3.	It promotes the four CLIL competences.	0	0	40	60
3.4.	It encourages bilingual interaction.	0	0	70	30
3.5.	It combines multilingual expressive resources.	0	0	80	20
3.6.	It allows the punctual use of the first language.	0	50	50	0

Source: self-made.

In this third dimension referring to language (table 4), it is observed that practically all video games have a good score for learning a language based on a CLIL methodology. 70% of them include each one of the different semiotic codes, since the visual language

works as a scaffolding for the understanding of the verbal, although the remaining 30% usually leave out the verbal code. Similarly, 60% of video games promote the four CLIL competences, that is, content, communication, cognition and culture, essential for learning English under this methodology. 80% combine enough multilingual expressive resources, although 50% of them do little work on the specific use of the first language.

Table 5

Learning Dimension

4. Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.	0	20	40	40
4.2.	It treats curricular content.	0	20	60	20
4.3.	It promotes the learning of curricular content.	0	20	60	20
4.4.	It provides appropriate information to the topic.	0	20	50	30
4.5.	It offers understandable diverse content.	0	0	100	0
4.6.	It favours cooperative work.	10	40	0	50

Source: self-made.

In this table (table 5) referring to learning, a greater balance is shown in each of the different items. In the first place, 80% of video games favour quite or a lot respectively the stimulation of learning English, where only 20% would stimulate it little. It can also be observed that most of them treat and promote quite or a lot the learning of curricular content with 80%, especially related to the natural and social sciences. And 100% of them, offer enough and diverse content that is understandable to students. On the other hand, 40% of video games favour little cooperative work within the story, there is also 10% that do not favour it at all due to the use of immersive virtual reality.

Table 6

Problem Solving Dimension

5. Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.	0	0	50	50
5.2.	It offers various solutions.	10	10	30	50
5.3.	It reinforces success.	0	0	70	30
5.4.	It activates content analysis and reasoning.	0	10	30	60
5.5.	It stimulates critical thinking.	0	10	50	40

Source: self-made.

In this table (table 6) referring to problem solving, almost all the items stand out in a positive way. In a balanced way, 100% of video games present enough or many challenges to solve, another 50% offer varied solutions to those challenges or tests, where only 20% offer none or few solutions, since they are fixed ideas. But 70% of them greatly reinforce success, which helps to compensate for this lack. Finally, it should be noted that 90% of video games greatly favour the activation of reasoning and content analysis, thus stimulating critical thinking in a notorious way in most of them.

Table 7

Values Education and Cultural Dimension

6. Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.	0	10	60	30
6.2.	It promotes respect for other cultures.	0	30	40	30
6.3.	It provides a suitable educational environment.	0	0	10	90

Source: self-made.

It can be observed in the table 7 that 90% of the selected video games transmit positive values, and 100% of them are valid to provide an adequate educational environment in the classroom for learning English. Except for one of them, having a small iota of violence in its animations, but without excessive importance. Regarding the respect and discovery of other cultures, 70% of video games do work on this aspect thanks to the curricular content that can be addressed. Only 30% of video games work little on this item. In general, all video games are acceptable or adequate with respect to the values

transmitted and more than half are especially interesting for the CLIL context due to the attention paid to cultural aspects.

Figure 1

Results related to the main curricular areas addressed
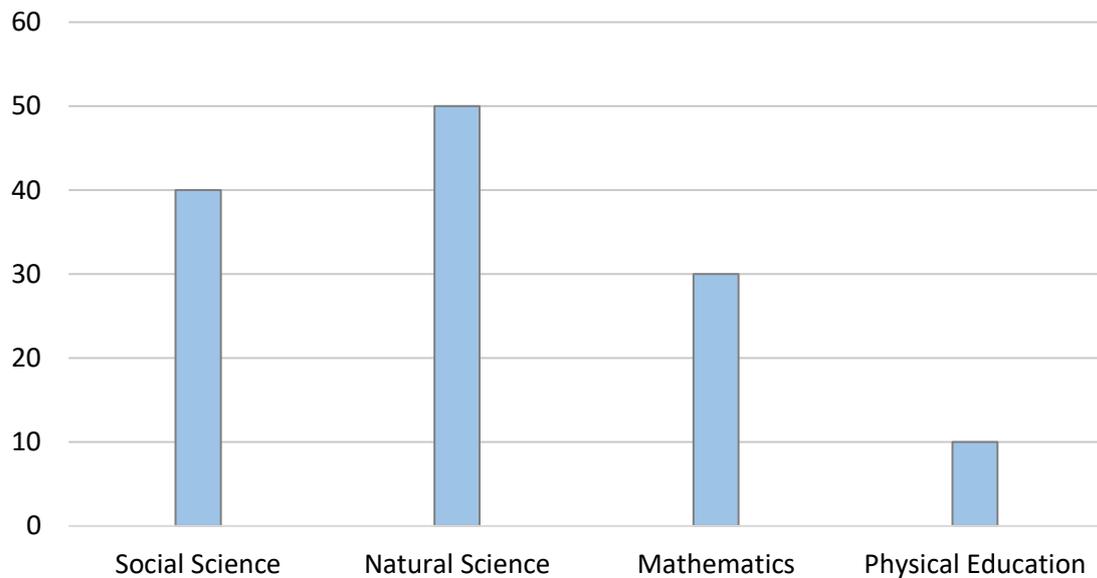
Note: result in percentage of the curricular areas addressed.

After the results obtained in the "Additional comments" section of the fourth dimension referring to learning, this table shows the percentage of curricular areas covered in the ten selected video games. In the first place, 60% of them address curricular content related to Natural Sciences. Second, 40% of them address curricular content related to the Social Sciences. Next, 30% with Mathematics and finally only 10% of them address curricular content related to Physical Education. It is important to note that there are several games that cover more than one area.

3.5.2. Individual Analysis

Before proceeding to the individual analysis, this table (table 8) shows the ranking of educational video games that enhance English learning in a bilingual classroom under a CLIL methodology.

Table 8

Video game ranking

Ranking	AD	ID	LaD	LD	PSD	EVCD	Points
1. Minecraft Education	13	20	23	22	19	10	107/120
2. No Man´s Sky	13	21	22	20	19	10	105/120
3. The Sims	12	18	21	20	17	10	98/120
4. Who wants to be a millionaire?	12	16	19	21	17	12	97/120
5. Simple Machines	11	22	18	18	18	9	96/120
6. Just Dance	12	18	21	20	11	12	94/120
7. Letter Quest	13	17	22	16	18	7	93/120
8. Flippy´s Tesla	11	20	21	14	16	11	93/120
9. Sim City	11	18	19	18	16	10	92/120
10. Super Lucky´s Tale	11	18	18	13	17	9	86/120

Source: self-made.

Table 9

Dimensions and indicators associated with the use of video games in the CLIL classroom: Minecraft Education Edition

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.				X
1.2. It adapts to different language levels.				X
1.3. It offers tutorials or help.			X	
1.4. It allows to see the progress in the game.		X		

Additional comments:

Ideal video game to work with all types of playable difficulty levels such as language due to its adaptability.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.				X
2.5. It proposes interesting and motivating challenges.		X		
2.6. It promotes engagement.				X

Additional comments:

It is a virtual world made up entirely of fully modifiable and interactive cubes.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.				X
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.				X
3.5. It combines multilingual expressive resources.				X
3.6. It allows the punctual use of the first language.			X	

Additional comments:

Being such a complete video game, each one of the CLIL skills is directly favoured, especially communication and cognition.

4. Learnings Dimension (LD)	1	2	3	4
4.1. It stimulates the learning of English.				X
4.2. It treats curricular content.				X
4.3. It promotes the learning of curricular content.				X
4.4. It provides appropriate information to the topic.			X	
4.5. It offers understandable diverse content.			X	
4.6. It favours cooperative work.				X

Additional comments:

Curricular area: Social Sciences, Natural Sciences, Mathematics.

Topic: multiple topics related to the abovementioned areas.

5. Problem Solving Dimension (PSD)	1	2	3	4
5.1. It presents challenges to solve.				X
5.2. It offers various solutions.				X
5.3. It reinforces success.			X	
5.4. It activates content analysis and reasoning.				X
5.5. It stimulates critical thinking.				X

Additional comments:

Each proposed activity is different, so it is a continuous challenge for the player, who must find the best solution to the problem.

6. Values Education and cultural Dimension (VECD)	1	2	3	4
6.1. It conveys positive values.			X	
6.2. It promotes respect and study for other cultures.			X	
6.3. It provides a suitable educational environment.				X

Additional comments:

Adequate video game in all items related to this dimension.

Source: self-made.

Minecraft is a game that moves well in simplicity. For this reason, and related to the adaptability dimension, this video game is ideal for working with all kinds of playable difficulty levels, such as language, since it is the teacher who can adapt each of the texts or missions to be carried out, supported by the different written tutorials.

Without a doubt, one of the strengths of this video game is the interaction and the immense variety of available resources and their design and creation of content and characters. It is not intended that the teachers teach *Minecraft* in its entirety, but that in the long run it is the students themselves who build the class dynamics. Although it can be considered a motivating game, it has not obtained a higher score in this item because there are others on the list that use other more effective strategies to reinforce motivation.

Regarding language dimension, *Minecraft* is particularly good since it practically scores the most on all items fulfils each of the items to the maximum, including all the codes and providing new vocabulary with dialogue and exchange of ideas, together with the four CLIL competences.

As for the dimensions related to learning and problem solving, along with language, this is where this video game stands out above all the others. This is thanks to that connection with the teacher, who can program the different missions or activities based on different curricular content, such as Social Sciences with the creation of the pyramids of Egypt, thus promoting reasoning and critical thinking, being able to adapt to any specific curricular content during the school year and offer various solutions to a problem. In addition, cooperative work is favoured from the classroom or through chat, thus stimulating the learning of written English.

Referring to the last dimension, this video game is considered adequate with respect to the values it transmits, and the attention paid to cultural aspects that can be treated in parallel with the desired curricular content.

Table 10

Dimensions and indicators associated with the use of video games in the CLIL classroom:

No Man´s Sky

1. Adaptability Dimension (AD)	**1**	**2**	**3**	**4**
1.1. It adapts to different levels of playable difficulty.			X	
1.2. It adapts to different language levels.			X	
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.			X	

Additional comments:

It encourages a quick adaptation of the player to the different missions and scenarios**.**

2. Interactivity Dimension (ID)	**1**	**2**	**3**	**4**
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.				X
2.4. It encourages resource design.				X
2.5. It proposes interesting and motivating challenges.			X	
2.6. It promotes engagement.			X	

Additional comments:

It is a highly sensory experience thanks to the advanced audio-visual section together with the various actions to be carried out by the player.

3. Language Dimension (LaD)	**1**	**2**	**3**	**4**
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.			X	
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.				X
3.5. It combines multilingual expressive resources.				X
3.6. It allows the punctual use of the first language.			X	

Additional comments:

It allows the player to share and discuss the information found by the players through a chat and through the use of the microphone.

4. Learnings Dimension (LD)	1	2	3	4
4.1. It stimulates the learning of English.				X
4.2. It treats curricular content.			X	
4.3. It promotes the learning of curricular content.			X	
4.4. It provides appropriate information to the topic.			X	
4.5. It offers understandable diverse content.			X	
4.6. It favours cooperative work.				X

Additional comments:

Curricular area: Natural Sciences.

Topic: the space, fauna and flora, thanks to the use of an encyclopaedia where the player can collect everything learned on each planet visited.

5. Problem Solving Dimension (PSD)	1	2	3	4
5.1. It presents challenges to solve.			X	
5.2. It offers various solutions.				X
5.3. It reinforces success.				X
5.4. It activates content analysis and reasoning.				X
5.5. It stimulates critical thinking.				X

Additional comments:

It contains a large number of missions and personal challenges to be solved by the player.

6. Values Education and cultural Dimension (VECD)	1	2	3	4
6.1. It conveys positive values.			X	
6.2. It promotes respect and study for other cultures.			X	
6.3. It provides a suitable educational environment.				X

Additional comments:

Adequate video game in all items related to this dimension.

Source: self-made.

We are facing a very enjoyable adventure video game, where everything concerning the artistic section stands out with a colourful setting and a series of on-screen effects that stand out in the audio-visual advance. This helps the player to quickly adapt to the level of playable difficulty and language based on that freedom to discover planets with the meticulous help of countless mini tutorials as we progress through the story. The sum of all the factors makes *No Man's Sky* a very sensory experience, which by default seems to be measured and tuned with great care, where each specific moment seems to be associated with a different and unique stimulus. This characteristic, together with the great variety of actions to be carried out by squeezing all their resources to the maximum, makes this point more motivating than the previous video game, since the students discover on their own the different planets and their characteristics that make them up.

Moreover, the section referring to language is positive because all the codes are touched, although the verbal is the one that is most left aside, only enhanced through an online chat with the use of a microphone and headphones. However, the game has a great variety of texts, such as informative posters of the different plants or animals discovered. The only less positive aspect is the absence of options to modify these fixed texts or aids within the game's history, so it would require an intermediate level of English. Even so, this also helps to enhance and promote the four CLIL competencies and strengthen the bilingual interaction, stimulating the learning of English.

Thanks to all the above, and together with the large amount of curricular content focused on the theme of nature and space, the game presents an infinite encyclopaedia of animal species, fauna, flora and even everything that may represent something unknown. The students must discover and upload the information to share it with the other players and learn from it. That is, although the video game has a more specific theme, it is ideal for working on Natural Science. But without a doubt, the strong point of this video game are the different problems and situations that it poses throughout its history. It contains different personal challenges to be carried out with a great prize for success, being able to travel to other planets, build our own spaceship and even collect belongings to survive and modify objects.

Table 11

Dimensions and indicators associated with the use of video games in the CLIL classroom:

The Sims

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.			X	
1.2. It adapts to different language levels.			X	
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.		X		

Additional comments:

It presents some bugs in the development of the game.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.			X	
2.5. It proposes interesting and motivating challenges.		X		
2.6. It promotes engagement.			X	

Additional comments:

It contains an infinity of selectable and modifiable resources on different themes focused on aspects of everyday life.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.			X	
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.				X
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.			X	

Additional comments:

The verbal linguistic code and especially the communication competence are favoured in a positive way through conversations and routine actions with the other players.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.				X
4.2.	It treats curricular content.			X	
4.3.	It promotes the learning of curricular content.			X	
4.4.	It provides appropriate information to the topic.			X	
4.5.	It offers understandable diverse content.			X	
4.6.	It favours cooperative work.				X

Additional comments:

Curricular area: Social Sciences and Natural Sciences.

Topic: socialization, tasks and routines.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.				X
5.2.	It offers various solutions.				X
5.3.	It reinforces success.			X	
5.4.	It activates content analysis and reasoning.			X	
5.5.	It stimulates critical thinking.			X	

Additional comments:

Each player will have their own challenges to achieve, being able to favour all kinds of thoughts and reasoning in a different way in each case.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.			X	
6.2.	It promotes respect and study for other cultures.			X	
6.3.	It provides a suitable educational environment.				X

Additional comments:

Adequate video game in all items related to this dimension.

Source: self-made.

This video game is accessible and comfortable for everyone, distilling comfort on all four sides in terms of handling, although it presents some bugs or failures that interrupt this dynamism as for example, failures in the screen loads when changing the location of the character. This helps the player to adapt to the level of language based on that freedom of discovery and conversation with the help of mini tutorials or the teacher through the chat.

Referring to the interactive dimension, the idea of the video game is based on directing the destiny of people in the adventures and misadventures that they live in their day to day, starting with the creation process, being able to design physically and mentally a family or independent individuals. So, there are a lot of available and editable resources. We are free to do what we want in the game, although following the interests of the character, he or she will be happier and we will have many more rewards, favouring commitment and motivation.

As for the dimensions related to language and learning, this is where this video game stands out, being remarkably similar to the world of Minecraft, placed first in the ranking. All this thanks to the diverse and fun ways of relating to other users through selectable short conversations or using online chat, providing new vocabulary with dialogue and exchange of ideas. In addition, it has the advantage of working on certain curricular contents based on the social sciences in relation to our personal desires and daily life. What really matters is the aspiration that we have chosen and that will make what really attracts us are relationships with others, such as art or sports, among many other things. This section completes the four CLIL competences being a good method to stimulate written and visual learning of English through cooperative work simulating everyday life.

In conclusion, it is a simple game, where we can take the liberty of facing the action from various perspectives within a simulated world that should convey positive values within suitable educational environment.

Table 12

Dimensions and indicators associated with the use of video games in the CLIL classroom:

Who wants to be a millionaire?

1. **Adaptability Dimension (AD)**		**1**	**2**	**3**	**4**
1.1.	It adapts to different levels of playable difficulty.			X	
1.2.	It adapts to different language levels.		X		
1.3.	It offers tutorials or help.				X
1.4.	It allows to see the progress in the game.			X	

Additional comments:

A specific reading level is required to be able to understand the question and answer correctly even with the help provided by the game.

2. **Interactivity Dimension (ID)**		**1**	**2**	**3**	**4**
2.1.	It favours the immersion inside the story.		X		
2.2.	It allows to explore the versatility of resources.		X		
2.3.	It provides feedback on the actions taken.				X
2.4.	It encourages resource design.			X	
2.5.	It proposes interesting and motivating challenges.			X	
2.6.	It promotes engagement.			X	

Additional comments:

It has a section where both teachers and students can formulate their own questions and answers with a free theme by making them participate in a television program.

3. **Language Dimension (LaD)**		**1**	**2**	**3**	**4**
3.1.	It includes variety of codes: written, oral and visual.			X	
3.2.	It provides appropriate vocabulary codes.			X	
3.3.	It promotes the four CLIL competences.				X
3.4.	It encourages bilingual interaction.			X	
3.5.	It combines multilingual expressive resources.			X	
3.6.	It allows the punctual use of the first language.		X		

Additional comments:

It leaves aside the learning of spoken English, but it does enhance the learning of vocabulary related to different topics.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.			X	
4.2.	It treats curricular content.				X
4.3.	It promotes the learning of curricular content.				X
4.4.	It provides appropriate information to the topic.				X
4.5.	It offers understandable diverse content.				X
4.6.	It favours cooperative work.		X		

Additional comments:

Curricular area: English

Topic: general culture and vocabulary.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.			X	
5.2.	It offers various solutions.			X	
5.3.	It reinforces success.				X
5.4.	It activates content analysis and reasoning.				X
5.5.	It stimulates critical thinking.			X	

Additional comments:

It favours reasoning and analysis to get to select the correct answer through the different solutions.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.				X
6.2.	It promotes respect and study for other cultures.				X
6.3.	It provides a suitable educational environment.				X

Additional comments:

The video game meets all the requirements to obtain the maximum in this dimension

Source: self-made.

This video game is totally different from the previous three and is an adaptation of the famous television program. It has a somewhat complex adaptation to language and playable medium high difficulty since a somewhat defined level of reading and understanding of English is required to be able to play, so it could be considered one of its weaknesses. Even so, the help of the tutorials and the progress of the game will be able to liven up your development throughout the different levels.

But still, it adds enough points when interacting with the player, since it is based on a television contest, where through a series of questions, which can be modified depending on the topic, the teacher or students will be able to build questions and their different answers to get the million dollars. This can create a motivating environment for students through the design or modification of resources, favouring the commitment to learn and get the prize.

Regarding the language dimension, although this video game leaves aside the learning of spoken English, since it only works on writing and visuals, other types of interventions can also be made in the classroom to strengthen this lack. But it should be noted that it has great potential to learn English in terms of vocabulary, being able to adapt to different curricular content of different subjects offering different solutions. And with this, it has a high potential for problem solving and reasoning to arrive at the correct answer, making students feel like the protagonists of a contest within a positive educational framework and the possibility of dealing with different cultural themes.

Table 13

Dimensions and indicators associated with the use of video games in the CLIL classroom:

Simple Machines

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.			X	
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.			X	
1.4. It allows to see the progress in the game.			X	

Additional comments:

It has short and concise game instructions, making it difficult to adapt to the students' language level.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.				X
2.4. It encourages resource design.				X
2.5. It proposes interesting and motivating challenges.				X
2.6. It promotes engagement.			X	

Additional comments:

As the history of the game progresses, the levels increase in difficulty as well as the motivation in the students.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.			X	
3.2. It provides appropriate vocabulary codes.			X	
3.3. It promotes the four CLIL competences.			X	
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.			X	

Additional comments:

This video game contributes a wide new vocabulary.

4. Learnings Dimension (LD)	1	2	3	4
4.1. It stimulates the learning of English.			X	
4.2. It treats curricular content.			X	
4.3. It promotes the learning of curricular content.			X	
4.4. It provides appropriate information to the topic.				X
4.5. It offers understandable diverse content.			X	
4.6. It favours cooperative work.		X		

Additional comments:

Curricular area: Natural Science and Mathematics.

Topic: simple physical laws and daily objects.

5. Problem Solving Dimension (PSD)	1	2	3	4
5.1. It presents challenges to solve.				X
5.2. It offers various solutions.			X	
5.3. It reinforces success.			X	
5.4. It activates content analysis and reasoning.				X
5.5. It stimulates critical thinking.				X

Additional comments:

Being a video game focused about science and basic physical laws, it positively favours reasoning through the use of various objects with their multiple solutions.

6. Values Education and cultural Dimension (VECD)	1	2	3	4
6.1. It conveys positive values.			X	
6.2. It promotes respect and study for other cultures.		X		
6.3. It provides a suitable educational environment.				X

Additional comments:

Adequate video game in the items referring to this dimension, although it only allows working with scientific culture.

Source: self-made.

Simple Machines is a simple two-dimensional video game whose purpose is to teach and learn science-related contents while learning English. Its adaptability in relation to the player is correct, but it is incomplete when it comes to adapting to the language because the instructions are brief and must be understood to develop the actions correctly. However, it is also important to highlight the help provided by the tutorials and the fluid progress of the game that enliven its development throughout the different levels that gradually increase in difficulty, becoming more and more complex.

The interaction device is one of the most enhanced dimensions in relation to the large number of available resources and its design to be able to overcome the level, providing information to the player about the actions taken and its appropriateness. Linked to this idea are the different levels with interesting, varied and motivating challenges to keep playing and learning.

Like the previous video game, although it has a good score regarding the dimension of the language, this is not where it stands out the most. This is since it leaves aside the learning of spoken English as it only works the written and visual codes. However, it contributes a wide new vocabulary on the subject and allows the students to read written texts and even go so far as to use the first spoken language to designate certain objects. Even so, the learning dimension can be stimulated in a positive way with respect to the subject of science, specifically physical laws. This promotes interest in curricular content related to the scientific field together with the amount of information adapted for its correct understanding. In addition, it reinforces cooperative work since each student can present his or her different points of view when passing a level and see which is the most effective to learn from it.

Finally, another of the most prominent dimensions is problem solving, complemented by the previous dimension. The video game contains a series of different levels or challenges to solve based on placing different objects in their correct place together with a simple physical law, becoming more and more complex, for which the player will have to activate his analysis and mental reasoning to solve the problem in the best possible way. This video game is linked to the transmission of positive values in a cultural context within an appropriate educational environment.

Table 14

Dimensions and indicators associated with the use of video games in the CLIL classroom:

Just Dance

1. Adaptability Dimension (AD)	**1**	**2**	**3**	**4**
1.1. It adapts to different levels of playable difficulty.				X
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.		X		

Additional comments:

It has different levels of dance difficulty, but it is not possible to modify the lyrics of the songs.

2. Interactivity Dimension (ID)	**1**	**2**	**3**	**4**
2.1. It favours the immersion inside the story.				X
2.2. It allows to explore the versatility of resources.			X	
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.		X		
2.5. It proposes interesting and motivating challenges.			X	
2.6. It promotes engagement.			X	

Additional comments:

Music and audio-visual effects enhance interaction with the player in a positive way.

3. Language Dimension (LaD)	**1**	**2**	**3**	**4**
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.				X
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.			X	

Additional comments:

Learning English can be encouraged while having fun doing sport.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.				X
4.2.	It treats curricular content.			X	
4.3.	It promotes the learning of curricular content.			X	
4.4.	It provides appropriate information to the topic.			X	
4.5.	It offers understandable diverse content.			X	
4.6.	It favours cooperative work.				X

Additional comments:

Curricular area: Social Sciences, Physical Education and music (arts).

Topic: body movement and lyrics songs.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.			X	
5.2.	It offers various solutions.	X			
5.3.	It reinforces success.			X	
5.4.	It activates content analysis and reasoning.		X		
5.5.	It stimulates critical thinking.		X		

Additional comments:

It does not allow to fully work on aspects of reasoning and content analysis, but it does favour active listening.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.				X
6.2.	It promotes respect and study for other cultures.				X
6.3.	It provides a suitable educational environment.				X

Additional comments:

It allows working with all kinds of cultural elements depending on the origin of the song and the artist.

Source: self-made.

There have not been social dance games as successful as Just dance as an option for fun, exercise, or just practicing new dances. But it can also be used as educational purposes for learning English. It has three modes in which the choreographies are easier, the songs are more appropriate and the indications are clearer and more positive. Even so, the adaptation to the language is complicated since it is not allowed to modify the lyrics of the songs. Nevertheless, it has a large amount list of songs available, with colourful and dynamic backgrounds that emphasize the sensation of the dance floor in many of the themes, where each background, as well as the clothing in each dancer is in accordance with the song, producing a total immersion within the game. As we progress, a lower or higher score will accumulate, certain prizes and other achievements await us to be unlocked, favouring commitment.

In addition, this video game stands out favourably in the dimensions of language and learning thanks to the fact that while the students dance and listen to the song, they enhance active listening and pronunciation of English along with reading the lyrics of the song itself. This manages to cover the different codes and promote CLIL competences. And just as it favours the learning of English, it is also possible to work on specific curricular contents related to musical culture while at the same time favouring cooperative work in choreographies.

On the contrary, being predefined songs and dances, it does not offer several solutions, so it hardly stimulates critical thinking in students, as well as reasoning at the same level as other video games. Even so, it is a different way of learning English together with practicing sports with guaranteed fun.

Referring to the last dimension, this video game allows to enhance the study and respect for the different cultures of origin of each song, thus providing a suitable educational environment for learning.

Table 15

Dimensions and indicators associated with the use of video games in the CLIL classroom: Letter Quest

1. Adaptability Dimension (AD)	**1**	**2**	**3**	**4**
1.1. It adapts to different levels of playable difficulty.			X	
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.				X

Additional comments:

A specific vocabulary level is necessary to be able to enjoy the playable experience in a positive way.

2. Interactivity Dimension (ID)	**1**	**2**	**3**	**4**
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.			X	
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.		X		
2.5. It proposes interesting and motivating challenges.			X	
2.6. It promotes engagement.			X	

Additional comments:

It allows the students to create all kinds of words with the letters available, a factor that allows the design and interactivity of the students in each game.

3. Language Dimension (LaD)	**1**	**2**	**3**	**4**
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.				X
3.3. It promotes the four CLIL competences.			X	
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.		X		

Additional comments:

This video game is an excellent way to teach and learn vocabulary, because it includes all the variety of linguistic codes to achieve it.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.			X	
4.2.	It treats curricular content.			X	
4.3.	It promotes the learning of curricular content.			X	
4.4.	It provides appropriate information to the topic.		X		
4.5.	It offers understandable diverse content.			X	
4.6.	It favours cooperative work.		X		

Additional comments:

Curricular area: English

Topic: vocabulary and pronunciation.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.				X
5.2.	It offers various solutions.				X
5.3.	It reinforces success.				X
5.4.	It activates content analysis and reasoning.			X	
5.5.	It stimulates critical thinking.			X	

Additional comments:

The more imaginative and complete the word formed, the greater the reward, which is why success is favoured in a positive way.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.		X		
6.2.	It promotes respect and study for other cultures.		X		
6.3.	It provides a suitable educational environment.			X	

Additional comments:

Appearance of slightly violent images, in addition to not promoting specific cultural aspects.

Source: self-made.

It is a video game mainly for learning English vocabulary and spelling based on the Scrabble board game. For this reason, its playable development is easy to understand and put into practice, but it should be noted that the higher the vocabulary level is, the easier it will be for the player to pass the level. Therefore, the adaptability dimension is balanced in terms of difficulty, without neglecting the various tutorials to help the player in their development.

Regarding interactivity, it is necessary to highlight the variety of resources and options for the creation of words linked to the feedback received according to the choice, motivating the students to discover new vocabulary produced by the commitment. In addition, the development of language is one of the most enhanced dimensions, together with the previous idea, since the video game works all types of linguistic code, especially the written one, thanks to the correct use of vocabulary. Words can also be saved in an encyclopaedia to later learn to pronounce them with the option of listening to the audio with its corresponding pronunciation. On the other hand, the cultural competence with respect to the CLIL methodology is a little side-lined, as it is not specifically worked on or designed for it.

Along with the previous dimension, the learning of curricular content and English is notorious. Although the video game is not based on working on a specific curricular content, other types of interventions can also be made in the classroom to strengthen the different desired curricular content. Even so, cooperative work can be adapted and further encouraged.

Of course, and with everything mentioned above, it could be said that the problem-solving dimension is present. The game offers several options and therefore different solutions to pass the level with the highest possible score, stimulating critical thinking and rewarding success with various jokers to use in the next letters to be combined to form a word.

Referring to the values it transmits, it is noteworthy to say that it includes some scenes of somewhat violent action when hitting the right word, but without mere importance. in addition to not promoting specific cultural aspects.

Table 16

Dimensions and indicators associated with the use of video games in the CLIL classroom:

Flippy´s Tesla

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.		X		
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.			X	

Additional comments:

The help of tutorials and the smooth progress of the game complement the inability to modify the dialogues and the difficulty of handling virtual reality.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.				X
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.			X	
2.5. It proposes interesting and motivating challenges.			X	
2.6. It promotes engagement.			X	

Additional comments:

It provides a total and different immersion to the player with the use of virtual reality glasses, favouring exploration on the different screens.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.			X	
3.2. It provides appropriate vocabulary codes.				X
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.		X		

Additional comments:

It contains dialogues and conversations of a linguistic variety, although it does not allow to promote writing through a kind of chat, but it does allow communication.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.			X	
4.2.	It treats curricular content.		X		
4.3.	It promotes the learning of curricular content.		X		
4.4.	It provides appropriate information to the topic.				X
4.5.	It offers understandable diverse content.			X	
4.6.	It favours cooperative work.	X			

Additional comments:

Curricular area: Natural Science.

Topic: science and scientific research.

It does not encourage cooperative work as it is a video game for exclusively individual use due to the use of virtual reality glasses.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.				X
5.2.	It offers various solutions.		X		
5.3.	It reinforces success.			X	
5.4.	It activates content analysis and reasoning.				X
5.5.	It stimulates critical thinking.			X	

Additional comments:

It presents various missions or challenges to be achieved, but with a closed solution, that is, it does not give the option to fully open the imagination of the students.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.				X
6.2.	It promotes respect and study for other cultures.				X
6.3.	It provides a suitable educational environment.				X

Additional comments:

Adequate video game in all items related to this dimension, even with the introduction of a new playable technology.

Source: self-made.

With *Flippy's Tesla*, an educational virtual reality video game, something similar happens with Just Dance. Adapting to the language is complicated since it is not allowed to modify the conversations or the theme. However, its dialogues are intended for children and young people, so it has an adequate level to be used as educational purposes for learning, in addition to English. Even so, the detailed help of the tutorials and the smooth progress of the game will be able to liven up your development throughout the different tests.

Without a doubt, its strong point is the interactivity with the player. Being a virtual reality video game, it provides the player with total immersion within the story, giving total freedom to explore resources or objects that we find around us with their corresponding feedback.

Regarding the language dimension, it also offers a diversity of codes to promote the four CLIL competences and strengthen the bilingual interaction, being able to safely say that it stimulates the learning of English while the player has fun in that multisensory world. We are facing a tool for scientific dissemination that tries to find and bring science to the youngest in a simple and fun way. This promotes interest in curricular content related to the scientific field together with the amount of information adapted for its correct understanding. However, on the contrary, being a video game solely based on science, it does not allow studying or working on other curricular topics within it. In addition, it does not favour cooperative work, since it is a game to be enjoyed individually through virtual reality glasses, although it is possible to work alternatively with the characters that appear during the story.

On the other hand, the unquestionable educational plus of the game cannot be denied. The scientific environment and the feeling of building the first prototypes with clues and diagrams motivates us to investigate with the available pieces, with their shape and to think about the different possibilities of combination, stimulating reasoning and analysis of the actions carried out. Finally, it should be noted that this video game based on virtual reality is fully adapted to an educational environment suitable for learning different cultural topics related to science and discovery.

Table 17

Dimensions and indicators associated with the use of video games in the CLIL classroom:
Sim City

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.			X	
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.		X		

Additional comments:

Premises with a certain degree of complexity referred to the understanding, but it has very complete tutorials.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.		X		
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.				X
2.5. It proposes interesting and motivating challenges.		X		
2.6. It promotes engagement.			X	

Additional comments:

Ability to build and manage the city according to the preferences of each player with the use of extensive resources to use.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.			X	
3.3. It promotes the four CLIL competences.				X
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.		X		

Additional comments:

Language learning quite complete, although the use of the first language is neglected.

4. Learnings Dimension (LD)		1	2	3	4
4.1.	It stimulates the learning of English.		X		
4.2.	It treats curricular content.			X	
4.3.	It promotes the learning of curricular content.			X	
4.4.	It provides appropriate information to the topic.			X	
4.5.	It offers understandable diverse content.			X	
4.6.	It favours cooperative work.				X

Additional comments:

Curricular area: Social Science.

Topic: civilizations.

5. Problem Solving Dimension (PSD)		1	2	3	4
5.1.	It presents challenges to solve.			X	
5.2.	It offers various solutions.				X
5.3.	It reinforces success.			X	
5.4.	It activates content analysis and reasoning.			X	
5.5.	It stimulates critical thinking.			X	

Additional comments:

It is about achieving a complete and efficient city through the use of the different resources achieved through the reasoned use of them.

6. Values Education and cultural Dimension (VECD)		1	2	3	4
6.1.	It conveys positive values.			X	
6.2.	It promotes respect and study for other cultures.			X	
6.3.	It provides a suitable educational environment.				X

Additional comments:

Adequate video game in all items related to this dimension thanks to the study of various civilizations.

Source: self-made.

Sim city is a video game based on the construction and management of a city with a simplified game system in favour of playability. It includes some complete tutorials to introduce the player in an ascending way to the functions available during the development of the game. But from a linguistic point of view, it is not entirely suitable since the premises or aids are somewhat complex when working with primary school students to learn English.

In its favour, the interactivity dimension is positive since the video game has many resources as the city grows, with the possibility of managing it with total freedom trying to obtain the best benefits for it. Even so, it does not present as motivating challenges as in previous video games, so the score is lower, but it does present good feedback with the decisions made.

In relation to the linguistic dimension, it is important to note that this video game has each one of the linguistic codes (written, oral and visual), some more enhanced than others, for example, the verbal code is only reduced to online chat using a microphone. For this reason, the bilingual interaction is achieved and each one of the CLIL competences is worked on, of course, with the occasional use of the first language in the background. In the learning and problem-solving dimensions, it may be where the video game stands out the most. This is because, with the great offer of packs within the *Sim City* saga, different curricular contents related especially to social sciences and history can be worked on, allowing the construction of all kinds of cities from different historical periods.

In addition, cooperative work is promoted through team building and relevant discussion through chat or in the classroom. This allows to stimulate critical thinking and content analysis to try to build an efficient and well-structured city, offering countless solutions thanks to the variety of available resources.

In summary, *Sim City* is a valid educational video game to work on the learning of multiple curricular contents under a suitable educational environment, but it is not the most suitable for learning English compared to the best positioned in the ranking.

Table 18

Dimensions and indicators associated with the use of video games in the CLIL classroom:

Super Lucky's Tale

1. Adaptability Dimension (AD)	1	2	3	4
1.1. It adapts to different levels of playable difficulty.		X		
1.2. It adapts to different language levels.		X		
1.3. It offers tutorials or help.				X
1.4. It allows to see the progress in the game.			X	

Additional comments:

The level of English, with respect to the dialogues, is only accessible for the last years of primary education.

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.			X	
2.2. It allows to explore the versatility of resources.				X
2.3. It provides feedback on the actions taken.			X	
2.4. It encourages resource design.		X		
2.5. It proposes interesting and motivating challenges.			X	
2.6. It promotes engagement.			X	

Additional comments:

It allows the player to explore and interact with the character on the different screens and levels.

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.				X
3.2. It provides appropriate vocabulary codes.			X	
3.3. It promotes the four CLIL competences.			X	
3.4. It encourages bilingual interaction.			X	
3.5. It combines multilingual expressive resources.			X	
3.6. It allows the punctual use of the first language.		X		

Additional comments:

Competence related to culture is the one that is least focused on this video game.

4. Learnings Dimension (LD)	1	2	3	4
4.1. It stimulates the learning of English.		X		
4.2. It treats curricular content.		X		
4.3. It promotes the learning of curricular content.		X		
4.4. It provides appropriate information to the topic.		X		
4.5. It offers understandable diverse content.			X	
4.6. It favours cooperative work.		X		

Additional comments:

Curricular area: Mathematics.

Topic: puzzle solving

5. Problem Solving Dimension (PSD)	1	2	3	4
5.1. It presents challenges to solve.			X	
5.2. It offers various solutions.			X	
5.3. It reinforces success.			X	
5.4. It activates content analysis and reasoning.				X
5.5. It stimulates critical thinking.				X

Additional comments:

Skills enhanced by solving puzzles and riddles.

6. Values Education and cultural Dimension (VECD)	1	2	3	4
6.1. It conveys positive values.			X	
6.2. It promotes respect and study for other cultures.		X		
6.3. It provides a suitable educational environment.				X

Additional comments:

Adequate video game in terms of educational values, but it does not deal with a specific cultural topic to work on.

Source: self-made.

In the last position of the ranking, *Super Lucky's Tale* is a platform video game with a simple playable difficulty and an adaptation to the language that is somewhat difficult to qualify. The development of the game is repetitive and intuitive at the same time as the few moments in which the dialogues take place are of a level of English not very accessible for the courses corresponding to the first levels of primary education. Of course, it is loaded with tutorials or icons that will help in the development of the different screens through which we make the character pass.

The dimension of interactivity is one of the most prominent since the video game facilitates the exploration of a wide variety of resources and available objects, not so much their design, but their use. At the playable level and in combination with the narrative story, it favours investment in the plot and the player's commitment to continue it.

Regarding the final score and although it contains all kinds of semiotic codes with an appropriate vocabulary, it should be noted that it is not entirely usable for learning a language compared to all the video games mentioned above. This is since it focuses more on the gameplay and interaction and enjoyment of the player than on the learning itself. However, if you can work in other ways to enhance CLIL skills, but not in such a specific way as with previous video games.

Regarding the dimension of learning, and especially the learning of curricular content, it is true that a variety of content can be worked on, but the range is so wide that it can lead to complications. In other words, there are so many aspects in which to be able to work with the students while they are playing that they can become overloaded, so it must be truly clear the didactic purpose to be achieved before starting the game. On the other hand, the video game does stimulate all kinds of thoughts and strategies for solving problems through the different challenges with puzzles and riddles that are happening at each level together with a positive educational environment, even if it is not a specific cultural topic to work on.

4. DISSCUSION

It can be observed that, in a general way, the analysis carried out offers positive results in terms of their potential of language learning, in this case English. To be able to corroborate this, attention must be focused on the data obtained from each dimension within each item to obtain specific global information. And especially to the dimension related to language learning and the use of the English language required by these video games.

The dimensions related to language and problem solving are those where higher values are obtained. This is since most of the selected video games possess or include a great variety of linguistic codes, provide new vocabulary in addition to strengthening critical thinking and reasoning by presenting different solutions to the same problem.

Therefore, and in order to use them in the bilingual classroom, the most suitable examples located in the first two positions of the ranking- are *Minecraft* and *No Man's Sky* respectively. Its most notable aspects are the great variety of actions to be carried out, squeezing all its resources to the maximum and favouring meaningful learning, scaffolding and motivation. On the other hand, the section referring to language is positive because all its codes are touched, although the verbal one outside the classroom is only enhanced through online chat with the use of a microphone and headphones. In addition, both video games allow the use of mechanisms equivalent to code-switching, that is, they allow to go from L1 to L2 and vice versa. All these characteristics make them two of the video games considered most suitable for working with bilingualism, according to the analysis of the instrument carried out.

It should also be said that these and other video games, some more than others, could be easily adapted to the CLIL methodology, since as mentioned before, they include a great variety of linguistic codes, in addition to favouring the cognitive abilities of the students across different curricular areas. Besides, we cannot forget the cultural aspect they have, starting from the idea that culture determines the way in which we interpret the world, and it is in CLIL where it functions as a channel to offer learning opportunities. It also enhances the use of other elements such as tutorials, external supports and visual signage ... which can serve as scaffolding.

On the one hand, it is worth pointing out the strengths of the video games analysed. it is interesting to note that several of them have been created with an educational intention parallel to playable fun and some of them even offer additional resources on their own website for educational use.

For Casañ (2017), a video game cannot be understood as such without the playful factor it possesses. This idea is reflected in the second dimension analysed, where the capacity for interaction and immersion of video games stands out, enhancing enjoyment and motivation at the same time. Therefore, it can effectively be considered that the video games analysed favour immersion, pose attractive challenges and are motivating for students.

The most representative example is the Minecraft saga, which has an edition exclusively intended for the educational field entitled "*Minecraft Education Edition*". The main idea of this expansion of the game is the availability of having their own room within it, where the tutor and students have their own space to develop the process of teaching and learning English in a reserved manner. This option favours the connection with the teacher, who can program the different missions or activities based on different curricular contents, such as Social Sciences, Natural Sciences and even mathematics. It is noteworthy to note that 80% of the selected video games offer a diversity of curricular content to be dealt with both inside and outside the game.

In relation to this idea, most of the selected video games favour or are based on learning under the curricular area mainly related to natural sciences, a large part of them with social sciences and mathematics and a small percentage with physical education. Therefore, a correspondence is visible in relation to those curricular areas that are used in bilingual programs to learn English. Even so, the curricular area related to Arts is present in each of the selected video games, due to the aesthetic and visual dimension they have. But within the contents addressed in the analysis, it stands out as a subject that is absent or not dealt with directly. Perhaps it could be considered interesting that there were more video games focused specifically on art education themes. At the same time, students can continue with the tasks from home, by entering their own username and password that will take them to that educational room. Another important point is the motivation that is generated by the feedback and that according to Meyer (2010)

increases once the students understand how to proceed to carry out a specific learning task based on the description, interpretation and corresponding analysis. In other words, working with this type of video game means something different, not just playing games, but it also has a pedagogical intention behind it. In other words, a new way of teaching English, a school with invisible walls.

Even so, being able to work with these aids requires willingness and knowledge on the part of the teacher, who must make an effort to learn and enjoy handling this type of innovative methodologies that involve the use of educational video games in the classroom.

On the other hand, problems or weaknesses have been detected. The dimension referring to adaptability is the one that obtains the lowest values. First, this is due to the fact that some of the video games present a somewhat complex playable level of difficulty depending on what age or for rather practical reasons. It is the example of *Flippy´s Tesla*, in which, to play, it is necessary to use certain complementary hardware or electronic devices, such as virtual reality glasses and two controllers or joysticks. Their use can be a barrier for some of the students and even for teachers who do not know how to connect and use these connectors. Even so, the help of the tutorials and the smooth progress of the game help to compensate for this negative aspect, not forgetting the total and different immersion that a sensory experience like this offers the player. Following this idea, but in a totally opposite way, we find *Super Lucky´s Tale*, a video game with a playable difficulty so simple that depending on the student's level of knowledge regarding the use of the game it can become boring. This must also be considered, as it can pose a problem in the medium and long term, weakening learning.

We can also observe that 70% of the selected video games have a low capacity to adapt their language to the user's/student's level or even that there is no possibility of adapting the language with the corresponding comprehension difficulties. *Just Dance* is the perfect case, since even being a different way of learning English together with sports practice, adaptation to the language is complicated since it is not allowed to modify the lyrics of the songs, that is, it has a language level default without allowing for variations. Even so, it favours other aspects, such as active listening and pronunciation of English along with reading the lyrics of the song itself. But even some of them, such

as *Simple Machines*, can also pose problems related to the scarcity of available linguistic input and not so much to the difficulty. This is because it leaves aside the learning of spoken English, since it only works the writing and especially the visual in relation to the large number of available resources and their design. But if it manages to provide enough information to the player about the actions taken with respect to the science curricular content, specifically the physical laws.

However, this does not mean these video games should be discarded as a resource for the bilingual classroom. To deal with all these setbacks, the teacher must come up with ideas or alternatives to make up for those deficiencies that can be found with the different video games to be used, since there is no perfect video game for educational use. The teacher can design activities with additional facilitating elements around the story of the game where if the English language is used, such as, for example, before starting to play, carry out an assembly with the visualization of images followed by a brainstorming giving different points of view on the story and the events that will happen to the characters. Teachers can also work on the vocabulary treated orally with classification games or even make a small theatrical representation based on some of the dialogues that are happening or singing a song.

5. CONCLUSION

We are immersed in a constant change in the field of education, and within that change the introduction of video games offers an opportunity for innovation. Video games do not seek to replace the traditional class, but rather seek to complement it by working differently and efficiently to acquire various content and skills. Its use as a virtual playful strategy can also be remarkably effective when learning a foreign language, always taking into account its negative aspects promoted by misuse.

Therefore, and as the main conclusion after the corresponding analysis, it can be stated that there is a certain variety of educational video games on the market suitable as a resource for the bilingual classroom in Primary Education. Everything depends on their selection and adaptation by the teacher, linked to the necessary knowledge of their

operation and the predisposition to be able to adapt them to the purpose or curricular area required for the teaching of English.

In reference to the repertoire of video games analysed, according to on the analysis carried out, the top five in the ranking can be highlighted: first *Minecraft Education Edition*, followed by *No Man's Sky*, *The Sims* and *Who wants to be a millionaire*. All of them can be labelled as appropriate resources for the bilingual classroom, as they facilitate and greatly enhance the dimensions related to language, knowledge and adaptability towards the player under an adequate educational environment, together with the four fundamental competences for which the CLIL methodology is rich (Coyle, 2006). In general, regarding the 4Cs, it can be noted that these video games provide a linguistic contribution and adaptive use of the language and the content addressed. They work on contents mainly related to the natural sciences and to a lesser extent to the Social and mathematical sciences. They are also linked to culture, in addition to developing multiple cognitive skills. This is due to the fact that several of the selected video games are already made with an educational purpose, therefore taking into account the possibility of use in the classroom.

Besides, the availability in the community of the instrument designed can serve to analyse and evaluate other video games for the same purpose by researchers or teachers interested in introducing educational video games in the classroom, as a method for learning English under a CLIL methodology and knowing what aspects to consider when selecting and working with them.

As limitations, it should be noted that the sample is relatively small and could be expanded in the future with a greater number of video games. In addition, although an analysis has been carried out based on the designed tool, the result of its application in a real educational context has not been verified.

For this reason and as future lines of research, the sample could be expanded, and an intervention with primary school students could be designed and carried out. In this way, some of the selected video games would be applied in a CLIL environment to see if they are indeed appropriate for improvement in learning English language and content.

6. REFERENCES

– Adachi, P. & Willoughby, T. (2011). The effect of video game competition and violence on aggressive behaviour: which characteristics has the greatest influence? *Psychology of Violence, 4,* 259-274

– Balaguer, R. (2002). Videojuegos, internet, infancia y adolescencia del nuevo milenio. *Kairos, 15.* https://cutt.ly/JmxAw5y

– Brown, H. D. (1994). *Principles of Language Learning and Teaching*. Prentice Hall.

– Casañ, R. (2017). Gamifying Content and Language Integrated Learning with Serious Videogames. *Journal of Language and Education, 3,* 107-114 https://cutt.ly/XmjnI7r

– Coyle, D. (2006). Towards Strategic Classrooms: learning communities which nurture the development of learner strategies. *Language Learning Journal, 31,* 1, 65-79. https://doi.org/10.1080/09571730701315774

– Coyle, D., Hood, P. & Marsh, D. (2010). *CLIL: Content and Language Integrated Learning*. Cambridge University Press.

– Coyle, D., Hood, P., & Marsh D. (2010). Content and language integrated learning. *C*ambridge *University Press.*

– Del Moral, E., Bellver, C. & Guzmán, A. (2018). CREAPP K6-12: Instrumento para evaluar la potencialidad creativa de app orientadas al diseño de relatos digitales personales. *Digital Education Reviews, 33*, 284-305.

– Del Moral, E., Fernández, L. & Guzmán, A. (2015). Videojuegos: incentivos multisensoriales potenciadores de las inteligencias múltiples en educación primaria. *Electronic Journal of Research in Educational Psychology, 13*(2), 243-270.

– Del Moral, M. & Fernández, C. (2015). Videojuegos en las aulas: implicaciones de una innovación disruptiva para desarrollar las Inteligencias Múltiples. *Revista Complutense de Educación. 26, 97-118.* https://doi.org/10.5209/rev_RCED.2015.v26.44763

– Ferrer, J. R. C. (2018). Juegos, videojuegos y juegos serios: Análisis de los factores que favorecen la diversión del jugador. *Miguel Hernández Communication Journal, (9),* 191-226.

– Gardner, H. (2005). *Inteligencias múltiples. La teoría en la práctica.* Paidós.

- Gómez, F., Molina, P., &Devís, J. (2018), Video games as Curriculum Materials: an approach to their use in Physical Education. *34*, 305-310. https://doi.org/10.47197/retos.v0i34.63440

- Greitemeyer, T. & Oswald, S. (2010). Effects of Prosocial Video Games on Prosocial Behavior. *Journal of Personality and Social Psychology, 98* (2), 211-221.

- Gros Salvat, B. (2009). El uso de los videojuegos para la formación universitaria y corporativa. *Comunicación y Pedagogía, 239-240,* 14-18.

- Gudjons, H. (2007). *Frontalunterricht – neu entdeckt. Integration in offene Unterrichtsformen.* Klinkhardt

- Hamari, J, Koivisto, J. & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. *47th Hawaii International Conference on System Science* (pp. 3025-3034) 10.1109/HICSS.2014.377

- Maldonado, F. (2020). Escucha activa, interacción e inmersión. Propuesta analítica sobre la creación y recepción del paisaje sonoro en los videojuegos. *Journal of Sound, Silence, Image and Technology. 3,* 8-25. https://cutt.ly/omjctd3

- Marqués. P (2001). Selección de materiales didácticos y diseño de intervenciones educativas. *DIM, https://cutt.ly/gmlHOYZ*

- Martínez, J., Egea, A. & Arias, L. (2018). Evaluación de un videojuego educativo de contenido histórico. La opinión de los estudiantes. *Revista Latinoamericana de Tecnología Educativa, 17.* 62-75 10.17398/1695-288X.17.1.61

- Mehisto, P., Marsh, D. & Frigols, M. J. (2008). *Uncovering CLIL, Content and Language Integrated learning in Bilingual and Multilingual Education.* Macmillan.

- Meyer, O. (2010). Towards quality-CLIL: successful planning and teaching strategies. *Plus, 33*(1), 11-29.

- Myers, D. (1999). Simulation, gaming, and the simulative. *Simulation & Gaming, 30,* 482-489.

- Olson, C.K. (2010). Children´s motivation for video game play in the context of normal development. *Review of General Psychology, 14(2),* 180-187. https://doi.org/10.1037/a0018984

- Ortega, J. A. (2002). Análisis crítico de los valores que transmiten los videojuegos: Descubriendo su potencial seductor de naturaleza subliminal. Recuperado el 9/10/2013 de http://www.ugr.es/si/txt/es/servinfo.htm

- Pérez, A. (2014). El aprendizaje con videojuegos. Experiencias y buenas prácticas realizadas en las aulas españolas. *EA, Escuela Abierta. Revista de Investigación Educativa, 17,* 135-156.

- Pérez, A. (2014). El aprendizaje con videojuegos. Experiencias y buenas prácticas realizadas en las aulas españolas. *Escuela Abierta, 17*, 135-156. http://dx.doi.org/10.29257/EA17.2014.09

- Piaget, J., Lorenz, K., & Erikson, E. (1982). *Juego y desarrollo.* Grijalbo

- Roque, MA. (2018). Desarrollando Porto: un Videojuego sobre Patrimonio Cultural. *Con A de Animación, 8,* 136-148. https://cutt.ly/pmjcjFl

- Sanchez, M. (2014). Videojuegos educativos: estrategia lúdica-virtual para desarrollar habilidades del Inglés en el grado séptimo. *Revista de Educación y Pensamiento, 21,* 152-159.

- Sedeño, J. (2010). Videojuegos como dispositivos culturales: las competencias espaciales en Educación. *Comunicar, 34,* 183-189.

- Swink S. (2008). *Game feel: A Game Designer´s Guide to Virtual Sensation*. Morgan Kaufmann.

- Swink, S. (2009). *Game Feel: A Game Designer's Guide to Virtual Sensation.* Elsevier*. https://gamifique.files.wordpress.com/2011/11/2-game-feel.pdf

- Thomson, J. (2010). *Good practice in interventions for teaching dyslexic learners and in teacher training in English speaking countries.* Dyslexia. https://cutt.ly/EmxLOl3

- Uuskoski, O. (2011). *Playing video games: A waste of time... or not? Exploring the connection between playing video games and English grades.* (Doctoral thesis, University of Helsinki) https://cutt.ly/8mxZaz9

- Villalustre, L. y Del Moral, M. E. (2012). Diseño de videojuegos con Scratch: una innovación disruptiva para promover la creatividad. I Congreso Internacional de Videojuegos y Educación, Alfás del Pi (Alicante): Universidad de Valencia.

- Yuste, R. (2012). Evaluación psicopedagógica de videojuegos. I Congreso Internacional de Videojuegos y Educación, Alfás del Pi (Alicante): Universidad de Valencia.

Appendix 1

Dimensions and indicators associated with the use of video games in the CLIL classroom.

1. Adaptability Dimension (AD)	**1**	**2**	**3**	**4**
1.1. It adapts to different levels of playable difficulty.				
1.2. It adapts to different language levels.				
1.3. It offers tutorials or help.				
1.4. It allows to see the progress in the game.				

Additional comments:

2. Interactivity Dimension (ID)	1	2	3	4
2.1. It favours the immersion inside the story.				
2.2. It allows to explore the versatility of resources.				
2.3. It provides feedback on the actions taken.				
2.4. It encourages resource design.				
2.5. It proposes interesting and motivating challenges.				
2.6. It promotes engagement.				

Additional comments:

3. Language Dimension (LaD)	1	2	3	4
3.1. It includes variety of codes: written, oral and visual.				
3.2. It provides appropriate vocabulary codes.				
3.3. It promotes the four CLIL competences.				
3.4. It encourages bilingual interaction.				
3.5. It combines multilingual expressive resources.				
3.6. It allows the punctual use of the first language.				

Additional comments:

4. **Learnings Dimension (LD)**	1	2	3	4
4.1. It stimulates the learning of English.				
4.2. It treats curricular content.				
4.3. It promotes the learning of curricular content.				
4.4. It provides appropriate information to the topic.				
4.5. It offers understandable diverse content.				
4.6. It favours cooperative work.				

Additional comments:

5. **Problem Solving Dimension (PSD)**	1	2	3	4
5.1. It presents challenges to solve.				
5.2. It offers various solutions.				
5.3. It reinforces success.				
5.4. It activates content analysis and reasoning.				
5.5. It stimulates critical thinking.				

Additional comments:

6. **Education in values and cultural Dimension (EVCD)**	1	2	3	4
6.1. It conveys positive values.				
6.2. It promotes respect and study for other cultures.				
6.3. It provides a suitable educational environment.				

Additional comments:

Source: self-made.