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THE USE OF A VIDEOGAME WITH SEN CONSIDERATIONS FOR THE TEACHING LEARNING PROCESS OF ENGLISH AS A FOREIGN LANGUAGE FOR 7TH GRADERS IN CHILEAN HIGH SCHOOLS

SEMINARIO PARA OPTAR AL TÍTULO DE LICENCIADO(A) EN PEDAGOGÍA EN INGLÉS CON MENCIÓN EN INGLÉS Y PEDAGOGÍA DE INGLÉS

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Resumen

En Chile, los Profesores de Inglés están constantemente intentando mejorar sus metodologías de enseñanza. Una importante mejora es el uso de TICs. Dentro de estas TICs, Gamificación en los colegios ha sido recientemente incluida. Para los Profesores de Inglés, es vital que todos sus estudiantes estén incluidos en sus clases, incluso los estudiantes con NEE. Este trabajo tiene como objetivo investigar sobre Gamificación e Inclusión en Chile, para así diseñar e implementar un videojuego para reforzar estrategias de desarrollo de vocabulario en Inglés como lengua extranjera en estudiantes de 7° básico. Dicho videojuego fue diseñado tomando en cuenta no solo a los estudiantes con NEE, sino que a la clase en su totalidad. Esta es una investigación exploratoria mixta; una encuesta online fue aplicada a un grupo de Profesores de Inglés en Chile, la cual arrojó que muchos de ellos sí ocupan TICs en sus clases, pero no así videojuegos. Después de una extensa investigación en tres tipos de NEE, el juego fue diseñado y probado en dos colegios Chilenos. Esta investigación incluye el análisis de los beneficios sobre el uso de videojuegos en las clases de Inglés y como las ventajas de su uso sobrepasan a las desventajas. Además, se incluyen sugerencias para el desarrollo de videojuegos considerando NEE.

Abstract

In Chile, EFL teachers are constantly trying to improve their teaching methodologies. One important improvement is the usage of ICTs. Within ICTs, Gamification in schools is a recent topic of discussion. For Chilean EFL teachers, it is vital to include all students in their classrooms, including those with SEN. This work aims to research both Gamification and Inclusion in Chile to design and implement a videogame to reinforce vocabulary building strategies in 7th-grade students of English as a foreign language. Said videogame was designed taking into consideration students with SEN and any other student in a class. Our research consisted of mixed exploratory research; it applied an online questionnaire on a sample of EFL Chilean teachers, which showed that several teachers do use ICTs in their classroom, but do not use videogames. After extensive research on three types of SEN, the game was designed and tested in two Chilean schools. This research includes an analysis of the benefits of using videogames in TEFL classes and how the advantages of their use outnumber the disadvantages. It also provides suggestions for designing an inclusive videogame considering SEN.

Introduction

Teaching English can be done using different approaches. One aspect of how to determine the way English is taught depends on the context the teaching will be carried out. For instance, in countries where the English language is the mother tongue, it is viewed as Literature (International Affairs Office, U.S. Department of Education, 2008). In other countries like India, English is thought of as a Second language (Ahalya Sundari & Hema Latha, 2015). In Chile, where the first language is Spanish, and most Chileans do not speak English on an everyday basis, English is thought of as a Foreign language (Barahona, 2014). Hence, teachers of English in Chile are EFL teachers.

Inside every classroom, teachers implement varied methodologies in order to teach. According to a study carried out by Dr B. Kumaravadivelu, among EFL teachers there are three methodologies that are mostly used: The Notional-Functional approach, also known as Communicative Language Teaching, Total Physical Response and Audio-lingual method (Kumaravadivelu, B. 2006). However, in recent years, more and more new methodologies are being implemented. Along with the aforementioned methodologies and other strategies, Gamification appears as a new strategy. In simple words, Gamification can be described as "the application of game design elements to non-game activities" (Nah et al., 2014. pp 401-409). Using videogames when teaching English, has already been implemented in the Chilean classrooms (Gómez Chova et al., 2015) and it has been so successful, that this idea has been implemented in other areas, such as improving the work environment in companies (Gómez-Álvarez et al., 2018). An example of gamification in ESL classrooms can be the use

of physical games used in the class, like Monopoly (Mena Octavio, 2019) or even the implementation of virtual games or apps, like Duolingo (Esteffan, 2015)

The aim of this dissertation is to design and implement a videogame with SEN considerations for students in 7th grade in Chilean Schools. First of all, a questionnaire was sent to in-service teachers, in order to find out about their opinions and feelings towards the use of videogames in the classroom. Afterwards, the research team designed a videogame with specifications for students with SEN. According to the Estudio Nacional de Discapacidad 2015 (National study of Disability), the most common disabilities in Chile are Autism Spectrum Disorder, Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder (Ministerio de Desarrollo Social, 2015). These needs were analysed in-depth, and the design took into account specifications to accommodate these needs. The dissertation considered for its methodology of mixed and exploratory research. A mixed investigation as it would involve both quantitative and qualitative instruments in the research. It is quantitative due to the use of a questionnaire and the tabulations of its answers. On the other hand, it was qualitative due to the use of an observation sheet in the implementations and in regard to the conclusions and the interpretations drawn from the results of this implementation. The videogame would be implemented in Chilean schools, specifically in 7th-grade. Later, feedback will be received from teachers and students after they have interacted with the videogame.

The research carried out for this dissertation has the purpose of helping future teachers to not only recognising their students' needs but also to take into consideration the different

special education needs that students might have; hence the teacher can be fully prepared to enhance knowledge in all of their students.

Chapter 1: Special Educational Needs (SENs).

1.1 Definition of SEN

In the current Chilean educational context, students' diverse types of learning processes present a challenge for teachers around the country. Each student, regardless of socioeconomic and cultural backgrounds, possesses a specific learning need which may interfere with their chance of learning at a faster pace. Thus, teachers have had to acknowledge that today's classrooms are diverse and complex, and must both become aware and act quickly upon such challenges to ensure the students' education. The newly found diversity of the students' needs inside the classrooms has been categorised under the spectrum of the Special Educational Needs (herein SENs).

SENs, as a concept, has been defined in a wide variety of ways, both by authors and distinguished institutions. Before the concept of SENs was even coined, the idea of SENs was referred to by the Public Law 94-142 in the United States of America in 1975. The document was named the Education of All Handicapped Children Act (Govtrack.us, 2019) in which the first acknowledgement of special education was mentioned, indicating the need for educational assistance for all handicapped children. As visible, the normalisation of the concept "handicapped individuals" was still palpable throughout the literature. However, the inclinations towards special education would begin to change around the world.

The concept of SEN was first introduced to the world through the Warnock Report of 1978 in England. Created by the committee of Enquiry into the Education of Handicapped Children and Young People of the UK, it introduced the new concept of SEN rather than reestablishing the ideal of disabilities of body or mind. The report introduced a new set of terminology regarding individuals with SEN, such as speech and language disorders, emotional and behavioural disorders, and learning difficulties, among others. Likewise, it also recommended that pupils with special needs be educated in mainstream schools as far as possible. As a whole, the main goal of the Warnock Report was to acknowledge the different needs which students may have during learning.

To be more precise, the Warnock Report stated the following:

> The purpose of education for all children is the same; the goals are the same. But the help that individual children need in progressing towards them will be different. Whereas for some the road they have to travel towards the goals is smooth and easy, for others it is fraught with obstacles. For some, the obstacles are so daunting that, even with the greatest possible help, they will not get very far. Nevertheless, for them too, progress will be possible, and their educational needs will be fulfilled, as they gradually overcome one obstacle after another on the way (1978, p. 5).

The Education Act of 1981, in the UK, changed the perceptions towards individuals with special needs. Prior to the document, education worldwide had a focus oriented towards identifying and making provision for handicapped individuals. Following the Warnock Report, attempts were made into changing the term of those individuals into SENs with brand-new legislation. The Education Act (1981) replaced the category of a handicap to SEN, to refer to individuals with "...significantly greater difficulty in learning than peers, or a disability that hinders him or her from using educational facilities normally available in the local school" (Wearmouth, 2013, p. 51). It also introduced a shift from diagnosis of disability (a 'within-child' problem) to the identification of educational needs (interaction between needs and provision), further enhancing the importance of all children should be educated in mainstream schools with exceptions.

Such breaking points led The United Nations Educational, Scientific and Cultural Organization (UNESCO) to hold the "World Conference on Special Needs Education: Access and Quality" in Salamanca, Spain in 1994. On that day, the "Salamanca Statement and Framework for Action on Special Needs Education" was created. The document revealed UNESCO's stand on the topic of the education of individuals with SENs. It further proclaimed SEN as a type of education related to the idea that "...every child has unique characteristics, interests, abilities and learning needs" (1994, p.viii). More importantly, it

defined that "...those with special educational needs must have access to regular schools which should accommodate them within a child-centred pedagogy…" (1994, p.viii), which helped to set up the idea that SENs may not be a differentiated type of education.

Furthermore, more definitions of SEN can be found such as the one provided by The Children and Families Act of 2014, which defines: "A child or young person has SENs if they have a learning difficulty or disability which calls for special educational provision to be made for him or her" (2014, provision 20). UNESCO reiterated a more specific definition of SEN in 2011, in the document "Revision of the International Standard Classification of Education (ISCED)". In the document, UNESCO has stated the following:

> Special Education Needs is 'Education designed to facilitate the learning of individuals who, for a wide variety of reasons, require additional support and adaptive pedagogical methods in order to participate and meet learning objectives in an educational programme. Reasons may include (but are not limited to) disadvantages in physical, behavioural, intellectual, emotional and social capacities. Educational programmes in special needs education may follow a similar curriculum as that offered in the parallel regular education system, however, they take individuals' particular needs into account by providing specific resources (e.g. specially trained personnel, equipment, or space) and, if appropriate, modified educational content or learning objectives. These programmes can be offered for individual learners within already existing educational programmes, or be offered as a separate class in the same or separate educational institutions' (p. 83).

Despite the broad nature of the concept, in the present piece of work, SEN will be defined using a more simplistic yet fulfilling definition provided by Hodkinson, in which SEN is defined as "... a legal definition that refers to children who have learning difficulties and/or disabilities, which make it more difficult for them to learn or access education than most of the children at the same age" (Hodkinson, 2013, p. 4).

1.2 Models of Disability

Although the concept of SENs has been widely defined, such conceptualizations of the word have mostly depended on the literature's inclinations towards a certain model of disability. The concept of Models of Disability refers to models "...which shape people's perceptions and ideas about people with disabilities (PWDs)" (Retief and Letšosa, 2018, p.1). Author Julie Smart (2009) further explained that the models of disability provide clear definitions and explanations, as well as being based upon the perceived needs of the individuals. Being completely biased, the models would often shape the identities of those individuals, adding prejudice and discrimination from others.

There are numbers of Models of Disability, but only a selected few will be further explained. The first model is called the Medical Model. Olkin (2001) briefly but effectively describes the nature of the medical model as following:

> Disability is seen as a medical problem that resides in the individual. It is a defect in or failure of a bodily system and as such is inherently abnormal and pathological. The goals of intervention are cure, amelioration of the physical condition to the greatest extent possible, and rehabilitation (i.e., the adjustment of the person with the disability to the condition and to the environment). Persons with disabilities are expected to avail themselves of the variety of services offered to them and to spend time in the role of patient or learner being helped by trained professionals (p. 26).

As a whole, the medical model views students with SENs as tragic figures who must be pitied and cured, or more like problems which must be solved (Thomas and Woods, 2003). On the other hand, teachers and those around such individuals are seen as carers who know best. Consequently, the medical model relies on prejudice and diagnosis.

The second model of disability is the Social Model. Coined by special needs academic Mike Oliver in 1981, it was the reaction against the Medical Model by the British disability movement of the 60s and 70s (Retief and Letšosa, 2018, p. 3). Part of that movement was the

Union of the Physically Impaired against Segregation (herein UPIAS), an organisation which created the manifesto known as the Fundamental Principles of Disability in 1976. UPIAS (1976) indicated that the perception towards people with SENs, which were then named as disabilities, is a socially constructed phenomenon.

The social model points out that society is responsible for the misjudgment of an individual's SEN's abilities, as "it disables people with impairments, and therefore any meaningful solution must be directed at societal change rather than individual adjustment and rehabilitation" (Barnes et al., 2010, p. 163). Retief and Letšosa also argued that having SENs was seeing as "....is a socially constructed disadvantage, which is, in a very real sense, imposed PWDs …" (2018, p. 4), thus interfering in people's lives.

Regarding education, the Social Model presents students in a certain light. Being viewed as a model in which students are disabled by the attitudes of others and the environment surrounding them. Students with SENs have barriers which they may need to break; teachers are seen as either likely oppressors or possible enablers.

The final model to be discussed will be the Rights Model. According to Retief and Letšosa (2018), this model views SENs as a human rights issue. For the most part, this model indicates that students with SENs are individual with inherent rights who are entitled to receive support from all sources. Degener (2017) outlines some characteristics, such as the model's inclination towards human dignity and the incorporation of all civil rights. The Rights Model also provides the theoretical framework necessary to create a policy. Unlike the Social Model, this model takes all minorities into account (Degener, 2017). In terms of its link with education, the Rights Model views its students with SENs as equal citizens who have a voice. Teachers are portrayed as antagonistic figures, due to their need for radical change.

The aforementioned models of disability help to picture the different ways students and people who live with a SEN have been and continue to be perceived in society and the

education system. Hence, this research team considers that having a broader sense of perception is key for a more inclusive society and education system.

1.3 History of SENs around the world.

1.3.1 History of SENs in the UK

The United Kingdom has been a pioneer in terms of SENs. From the 1978 Warnock Report to the different versions of the Code of Practice, England has provided the world with many valuable tools for more inclusive education. Amongst said tools, the Parliament of the UK has established a timeline regarding the history of SEN within the country.

The first mention of the term SEN dates back to the Education Act of 1944, a document which categorised children with SENs according to their diagnosis into different disabilities, with most children being regarded as impossible to educate. As a result, they would be sent into specialised schools (Select Committee on Education and Skills, 2006).

During the second half of the 20th century, the Warnock Report (1978) and the Education Act of 1981 revolutionized the literature with the introduction of the term SEN and the establishment of a more inclusive educational approach. Consequently, during the 80s and 90s, an increase in the number of students with SENs who studied in mainstream schools began to outnumber the class sizes of special schools in the country. Finally, in 1997, the newly chosen Labor Government in England expressed their support for inclusive education (Select Committee on Education and Skills, 2006).

During the first half of the year 2010, in the UK, ideals which favoured inclusion flourished. In 2001, The Special Educational Needs and Disability Act (herein SENDA), was declared as an amendment to the Disability Discrimination Act of 1995. In 2004, the document entitled “Removing barriers to achievement: The Government’s strategy for SEN” was created by the Department for Education & Skills, which had the main objective of helping students with SENs through the improvement of education by increasing standards

and strengthening the schools' community relations. In the same year, the report entitled "Special education needs and disability: Towards inclusive schools" was published by the Office for Standards in Education, Children's Services and Skills (OFSTED), which mainly focused on analysing the state of mainstream schools regarding their treatment of students with SENs. The report also revealed the lack of teacher training regarding SEN. In 2005, Baroness Warnock published another SEN-centred article, which concluded the revision of SEN as a major topic in British education (Select Committee on Education and Skills, 2006).

1.3.2 History of SENs in the US

Similarly to the UK, the United States of America has contributed immensely to the advancement of an inclusive education around the globe. Before the second half of the 20th century, students with SENs were not publicly educated in mainstream American schools, leaving parents with the sole option of homeschooling. Such treatment inspired parents to advocate expanding the public education system through engaging in dialogues with teachers and politicians. This led President Lyndon B. Johnson to promise the reformation of public education in 1965 (Creating Advocacy Groups, 2019).

The 1970s brought change into the American educational system and American society. It all began with the Rehabilitation Act of 1973, which guaranteed that individuals referred to as having a disability would have civil rights (All Education Schools, 2018). Likewise, as previously mentioned, the Education for All Handicapped Children Act (EAH) was issued in 1975, which allowed people with SENs to have access to free and public education. Thus, the establishment of special education was set up in America.

However, American special education was altered during the 1990s. The EAH (1975) was thoroughly revised and became the Individuals with Disabilities Education Act (herein IDEA) in 1990. IDEA's main focus is for a more individualised approach which can reach all students' different special needs. These needs were introduced as individual education plans, IEPs (IDEA, 1990). The use of IEPs was proposed for enhancing the students' preparedness to engage in the real world. IDEA also focused strongly on furthering research

into methodology (Creating Advocacy Groups, 2019). Currently, IDEA is valid and upgraded every five years since it was created.

At the beginning of the 2000s, more documents were created in order to improve the quality of education for students with SENs. In 2001, the No Child Left Behind Act (NCLB) was enacted to improve public primary and secondary school education. In regards to students with SEN, the federal law provided schools with technological assistance and accountability to best accommodate students with SEN (Nolen and Duignan, 2019). Currently, the United States provides full access for students with SEN into mainstream educational institutions.

1.4 History of SEN in Chile

Chile, as a country, is still recently adjusting to the needs of both individuals and students with Special Educational Needs. The term SEN in Chile has long been related to special education, and just lately, it has been acknowledged as part of mainstream education. Therefore, it is crucial to revise the historical background of the term SEN within the Chilean educational context.

According to the records of Godoy, Meza and Salazar's (2004), the topic of SEN in Chile was first introduced through the lenses of special education. The origins of special education in the country are linked to the first school in Santiago, which was oriented for deaf students in 1852. More than 50 years later, in 1928, the second SEN-oriented school was opened, an institution which received students with intellectual disabilities. Almost half a century later, the very first official study program for individuals with different intellectual difficulties was carried out in 1976. Throughout most of the 20th century and up to the 1960s, the amount of specialized Chilean schools began to steadily grow, as well as the number of educators willing to improve their knowledge and teaching of students with learning, sensory and mental difficulties (Godoy et al., 2004).

State-wise, from the 1950s onwards, the Ministry of Education started the implementation of specific policies which would aid a larger number of students with learning difficulties. Moreover, between the 40s and 60s, a more specific focus towards special education was put into practice. However, during the 70s, the creation and application of Exempt Decree Nº 185 can be considered by far the first and foremost development in Chilean Special Education. Created by Commission Nº 18, it had its roots as a way of properly studying Special Education. Consequently, the 80s signified a decade in which that vast majority of the decreets approved of plans and program were regarding Special Education (Godoy et al., 2004).

During the 1990s, the Educational Reform began to be modified as a way of ensuring equity of education for all individuals in the country, as well as allowing the integration of children and youth into society. In addition, more policies were designed to better integrate people with special needs into the educational setting. Particularly, Education Decree N°490/90 helped to establish the norms to be used inside specialized classrooms (Godoy et al., 2004). Moreover, in 1994, there was a new federal law named Law on Full Social Integration of People with Disabilities Nº 19,284. It set that students with SEN would be placed into mainstream schools but with a support system around each one of them (Godoy et al., 2004).

The new School Integration Policy (PIE, in Spanish) was created in 2003 as an immediate response to the people's rights to a proper education regardless of the type of special needs (Godoy et al., 2004). In addition, according to the law (Ley 20.201: Modifica el DFL Nº 2 1998, de Educación, Sobre Subvenciones a Establecimientos Educacionales y Otros Cuerpos Legales[1]) which began to be drafted in 2007, it regulated the financial aid which students with SEN would receive. Supreme Decree N° 170/09 "To Set Standards for Determining Students with Special Educational Needs Who will benefit from Special Education Subsidies" was also drafted in 2009 (Godoy et al., 2004).

[1] Law N° 20.201: modifies Law Ranking Decree N° 2 1998, education, about educational institutions and other legal entities subsidy.

Presently, there are a number of decrees and federal laws which are currently oriented for students with SEN. Decree 170 states the need for further support and resources for students with SEN. Law 20.422 acknowledges the need for equal opportunities for all, specifically for individuals with special needs or difficulties. The purpose of the law is to ensure a non-discriminatory inclusion. Lastly, one of the most recent yet relevant federal laws is Law 20.845: "De Inclusión Escolar que Regula la Admisión de los y las Estudiantes, Elimina el Financiamiento Compartido y Prohíbe el Lucro en Establecimientos Educacionales que Reciben Aportes del Estado 14"[2] which forbids the entry discrimination and the application of wrongful feeds for individuals with SEN (Godoy et al., 2004).

1.5. Areas of Special Needs

The term SEN in itself refers to a large number of types of special needs. In order to obtain a more profound understanding of SEN types, there must be an informative list which presents the different categories in which SEN has been divided into based on people's needs. the UK's official document regarding SEN is the Code of Practice, which was last updated in 2015, and which will be used as a way of explaining the broad areas of these needs.

The Special Educational Needs and Disability Code of Practice: 0 to 25 years (2015) has categorised students' special needs into four broad areas. The first one is communication and interaction, which refers to the complications which people present during the communication process. It identifies individuals with such problems as people with speech, language and communication needs. It further explains that such difficulty may be related to either not being able to say what someone wants to express or lacking the understanding of social rules or what is being communicated to them. Although it admits that every context is different, children with ASD present this difficulty (Special educational needs and disability code of practice: 0 to 25 years, 2015).

[2] About school inclusion which regulates student's admission and eliminates corporate funding and bans lucre in educational institutions that receive state profit 14.

The second area of special needs is Cognition and learning, which mostly alludes to difficulty in the pace of learning. Learning difficulties cover a wide range of needs from Mild Learning Difficulty (MLD) to Specific Learning Difficulty (SpLD). Severe Learning Difficulties (SLD) is "... associated difficulties with mobility and communication" (Code of Practice, 2015, p. 97), while Profound and Multiple Learning Difficulties refers to both difficulties in learning as well as physical or sensory ones. Lastly, there are the Specific Learning Difficulties, which describe conditions such as dyslexia, dyscalculia and dyspraxia (Special educational needs and disability code of practice: 0 to 25 years, 2015).

The third identified area of special needs is Social, emotional and mental health difficulties. Social and emotional difficulties have been said to manifest in ways which may vary from experiencing withdraw, preferring isolation and behaving disturbingly or disrespectfully. Such behaviours may be influenced by mental health issues such as anxiety, depression, self-harming, etc. Students with ADD and ADHD happen to be associated with such issues. Regardless, a support net must be guaranteed for students with these difficulties (Special educational needs and disability code of practice: 0 to 25 years, 2015).

Last, Sensory and/or physical needs are also considered being a part of the areas of special needs. It is noted that some students who live with such needs may need special provision. It is regarded as a need which may fluctuate. Difficulties related to it are usually impairments such as vision impairment (VI), hearing impairment (HI) and multi-sensory impairment (MSI). Such disabilities require additional support and equipment (Special educational needs and disability code of practice: 0 to 25 years, 2015).

1.6 Types of SEN

After being familiarized with the concept of SEN, this research group emphasizes the importance of understanding how fundamental it is for the process of every students' learning experience to consider their uniqueness and consequently to adapt the teaching methodology for all students. Research on the topic allows for contributions to the line of work. Thus, the

purpose of this study was to research and design a videogame with SEN considerations to be used by teachers of English in an inclusive Chilean classroom context.

The videogame is aimed at engaging all students present in the classroom, including students with SEN, in order to promote inclusion. Thus, it is necessary to provide further definitions of the SEN types chosen, and then explain why they were selected. In spite of the importance of acknowledging most SEN types in the educational context, this research group has decided to select are ASD and ADD/ADHD.

1.6.1. Attention-Deficit / Hyperactivity Disorder (ADD/ADHD)

1.6.1.1. Definition and History

The terms Attention-Deficit Disorder (herein ADD) and Attention Deficit Hyperactivity Disorder (herein ADHD) have been conceptualised in similar ways. Their description as types of medical disorders are most noticeable due to a person's inattention, hyperactivity, and impulsivity in different life contexts has been constantly mentioned in the literature (NHS, 2018; Shimabukuro *et al*, 1999; NIMH, 2019). Likewise, dictionaries like the Merriam-Webster dictionary have portrayed the disorder as the following:

> ADD is a developmental disorder marked especially by persistent symptoms of inattention (such as distractibility, forgetfulness, or disorganisation) or by symptoms of hyperactivity and impulsivity (such as fidgeting, speaking out of turn, or restlessness) or by symptoms of all three, and that is not caused by any serious underlying physical or mental disorder (Merriam-Webster, 2017).

Although the definition seems clear nowadays, the conception of the term was difficult to coin. The first official reference to what is currently known as ADD and ADHD is linked to British paediatrician Sir George Still in 1902, when he noticed children's lack of control. Sir George Still is viewed by a number of authors as the starting point of the disorder (Lange *et al*., 2010; Holland and Valencia, 2017).

The disorder itself was not recognised for several years. In 1952, the Diagnostic and Statistical Manual of Mental Disorders (herein DSM) was created and became the first document to clarify the different mental health issues (APA, 2017). In spite of this, the first edition of the DSM did not include ADD/ADHD. Actually, the first time the disorder was considered was in the DSM II in 1968, but under the name of "hyperkinetic impulse disorder" (Lange *et al*., 2010; Holland and Valencia, 2017; Frank, 2019).

In the 80s, however, the name of the disorder was changed for the one we currently know. The third version of the DSM clarified that the Hyperkinetic Impulse Disorder was renamed the Attention Deficit Disorder (ADD). Authors did not come to an agreement as to establishing hyperactivity as an official symptom, therefore the disorder was separated into ADD and ADHD (Holland and Valencia, 2017; Frank, 2019).

Further adjustments were made to the concept of ADD/ADHD in 1987 with the revised version of the DSM, in which ADHD has no subtypes and was grouped into a single disorder. Regardless of the 1987 DSM version, ADHD was written to be specific about the types in the 1994, 2000 and 2013 versions (Frank, 2019). In the present days, ADD/ADHD is usually referred to as a similar concept, and its use is dependant upon the individual's diagnosis.

1.6.1.2. Characteristics of ADD/ADHD

ADD/ADHD is noticeable through a number of characteristics. As previously mentioned, the core signs of the disorder are inattention, hyperactivity and impulsiveness. It has been argued that people who experience ADHD are most notoriously characterized as being distracted with ease and active to an extreme, regardless of the individual's age (Millichap, 2011). In addition, the disorder has also been characterised as an early-onset and heterogeneous condition, meaning that it is visible since infancy and that the nature of the condition depends on the type of ADHD which the person possesses (Faraone and Biederman, 1998). Such point is regarded by studies which reveal that at least 30% or even up to 60% of children with ADHD have continued to show signs of the mental disorder well into their adulthood (Weiss and Hechtman, 1993).

Despite assumptions, ADHD is not a one-size-fits-all condition. The American Psychiatric Association (herein APA) has identified three types of ADHD. The first one being the Inattentive type, which is overall characterized by the difficulty of concentration within the individual. The second one, Hyperactive/Impulsive type, can be identified by an anxious and restless behaviour. Finally, the last one is a Combined type which presents a mixture of the previously mentioned types (APA, 2017).

1.6.1.3. The impact of ADD/ADHD in a person's education

Regarding the impact of ADD/ADHD during a person's life and education, academic Val Harpin (2005) provides crucial information. As previously stated, ADD and ADHD does not have a cure (NHS, 2018) and can manifest throughout a person's life, which means it inevitably influences the person's learning capabilities. Thus, it is important to outline how the disorder will impact the students in all stages of their education.

During the preschool years, the students are expected to show signals of poor concentration, high levels of activity, and impulsiveness. The presence of children with ADHD will be notorious in the classroom, as they will be more lively and energetic, as well as present difficulties in learning (Harpin, 2005).

In their primary school phase, students with ADHD are most likely to experience academic failure, rejection by peers, and low self-esteem despite displaying a higher level of maturity. They are also noted to suffer from changes in family functioning, as their growth presents more challenges to parents (Harpin, 2005).

Finally, in their youth, ADHD students continue to demonstrate the core signs of the disorder, but with a decrease in their overactivity. Likewise, the identity crisis is also experienced by ADHD youth, with a decline on the sense of self. They may also develop disruptive behaviour, such as an inclination for aggressiveness and antisocial preferences (Harpin, 2005).

1.6.1.4. ADD/ADHD in the Chilean Education System

Chile, as an educational system, provides education for children living with ADD and ADHD. Being recognised within the country's federal laws, Attention Deficit Disorder is defined as "an early on disorder which originates during the student's first seven years of life and is characterised by a type of behaviour in which the presence of an attention deficit, impulsiveness and hyperactivity is palpable" in Article 40 of the Decree 170 under the Law 20.201 (p.15). And statistically, there is an ingrowing number of students in the Chilean education system who live with ADD/ADHD. According to MINEDUC (2015), the number of students with ADHD has reached 12,6% diagnosed cases at a national level.

Most studies related to ADD/ADHD in Chile are heavily focused on epidemiological and neurological aspects. An example of the aforementioned statement is the study conducted by De la Barra *et al.* (2013) which reported the prevalence of ADHD in children and teens between the ages of 4 and 18 years old from four different Chilean provinces and concluded that the prevalence of ADHD in children and adolescents was of 10% in the country. Moreover, researchers Rojas and Vrecko (2017) focused on the effects which medication has amongst the Chilean student population who lives with ADHD. The finding of the study reflected that the efficacy of medication for ADHD depended on the student's context and support system around them (Rojas and Vrecko, 2017).

Notwithstanding, it is clear that ADD and ADHD in Chilean education is currently viewed through prevalence and medical aspects. Thorough research on other aspects of the disorder may benefit Chilean literature, as well as providing sources for the education of students with ADD and ADHD.

1.6.2. Autism Spectrum Disorder (ASD)

1.6.2.1. Definition and History

Autism Spectrum Disorder (herein ASD) has been characterised by encompassing a diverse group of neurodevelopmental conditions (Fernández et al., 2017). Currently, the Diagnostic and Statistical Manual of Mental Disorders (herein DSM) has defined ASD as "a neurodevelopmental disorder which "is diagnosed only when the characteristic deficits of social communication are accompanied by excessively repetitive behaviors, restricted interests, and insistence on sameness" (American Psychiatric Association, 2013, p. 31). The awareness of its nature as a conglomeration of disorders which share core signs allows for a more extensive definition.

Nonetheless, ASD as a term has drastically evolved. It was initially linked to schizophrenia by Swiss psychiatrist Eugen Bleuler (Bleuler, 1911). Bleuler's decision of wording was associated with his understanding of the Latin word autismus. As Ames (2018) explained "Autism, or autismus… comes from the Greek word 'autos', which means 'self'. It was meant to describe the 'isolated self' that he saw in those with schizophrenia". Hence, Bleuler's linking of the ASD symptoms to schizophrenia.

Autism continued to be associated with schizophrenia until 1938. The researches and lectures of Dr Hans Asperger from the Vienna University Hospitals revolutionised the meaning of Autism, as well as provided the information needed to distance the term from schizophrenia. Dr Asperger's pioneer status was so influential that his last name was used to refer to one of the disorders within ASD (Ames, 2018; Baker and Lang, 2017; Zeldovich, 2018).

Likewise, another accomplishment was achieved in 1943 with the first-ever description of Autism. Austrian-American psychiatrist and physician Leo Kanner wrote about the behaviours present in early on autism, such as loneliness, anxiety towards change in patterns,

to name a few (Kanner, 1943). Kanner's ideas portrayed autism as "a profound emotional disturbance that does not affect cognition" (Ames, 2018). Kanner's research led the second version of the DSM to define autism as a psychiatric condition. Despite Kanner's ideas, the author also noted the role of mothers in their children's behaviour. Such inclination twisted the line of research regarding ASD, which as a result became confusing during the 60s and 70s. As a way of providing a cause for the disorder, it was proclaimed that the root of ASD relied on cruel and emotionally detached mothers, whose mistreatments of their offspring turned them into socially inadequate individuals. Bruno Bettelheim named it the "Refrigerator mother theory", as mothers were perceived as cold and unattentive (Ames, 2018; Zeldovich, 2018). Such theory was quickly refuted by psychologist and father to a son with autism Bernard Rimland, who published "Infantile Autism: The Syndrome and its Implication for Neural Theory of Behavior" in 1964.

During the 80s and 90s, more changes were made to the definition of ASD. The 1980 version of the DSM identified autism as a separate diagnosis and described it as a pervasive developmental disorder. It also specified the criteria, which three main components were a lack of interest in people, bizarre responses to their context and finally struggles in communication (Diagnostic and Statistical Manual of Mental Disorders, 1980; Zeldovich, 2018). Furthermore, the revised 1987 version of the DSM both broaden the concept from plain "autism" into "autism disorder" and updated the criteria. However, the new general definition was severely damaged by the Anti-Vaccination movement of the 1990s, which pointed out at vaccines as the cause of autism. The study was ultimately debunked, but to this day it still has notoriety and prominence amongst the general population of the world (Ames, 2018).

Currently, more specifications have been made to expand ASD as a term and as a SEN. The DSM-IV became the first edition to categorise autism as a spectrum. It also added Asperger's Disorder into ASD. As of the latest DSM version, being DSM-5, it introduced the concept of "Autism Spectrum Disorder" and it lengthened the criteria to be considered part of the ASD community (Zeldovich, 2018). The evolution that the term ASD went through characterises both the addition of criteria as well as the improvement of information

regarding disorders under SEN. Thus, ASD can be understood as "a biologically based neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, and activities" (Augustyn and von Hahn, 2019).

1.6.2.2. Characteristics of ASD

Organisations such the National Health Service in the UK (Herein NHS) and the National Institute of Mental Health (Herein NIMH) have outlined the most notorious characteristics of ASD based upon different studies as well as the established information found in the different versions of the DSM.

To begin with, difficulty in communicating and socialising with others is a key component of ASD. Some of the most common behaviour signals are avoiding eye contact, refusing to share a visible glee about events or activities, having issues with fast responses, having difficulties with following a conversation, talking about a personal interest without regarding the people's desires to listen to them, disregarding social cues, having issues with matching their feelings to their facial expressions or movements and finally having difficulties with comprehending others' points of views (NHIM, 2018). It is also specified that in some cases, babies who have ASD do not produce the typical baby sounds, which would attribute to the difficulty to communicate (NHS, 2019).

There is also a preference for repetitive behaviours in people with ASD. It has been indicated that children with ASD like to stick to routines or daily activities and they strongly disagree with changes (NIMH, 2018). Likewise, children with ASD lack the awareness of the surrounding children, as well as having a tendency to repeat what others have uttered (NIMH, 2018; NHS, 2019). They also show an interest in limited topics, which ultimately show their obsessive tendencies.

1.6.2.3. The impact of ASD in a person's education

As previously stated, ASD influences the learning experience of those who live with the disorder. It is relevant then to explain the different manners in which such influence may be conducted. The aforementioned characteristics impact children with ASD and their capacities to learn. Due to this communication issue, understanding a subject may be harder for them. Nonetheless, children with ASD also display many advantages in learning, such as the ability to remember specific details as well as strong abilities when visually or auditorily engaged. They may also excel in subjects such as Maths, Science and Art (NIMH, 2018).

Apart from the capabilities which students with ASD have, there is a trend in literature which reflects on the positive influence which the students' environment can have in their learning. MDs Scott Myers and Chris Plauché Johnson conducted research oriented towards the management of children with ASD in which the importance of the educational programs was discussed. Myers and Plauché Johnson (2007) insisted on the need for comprehensive educational interventions for students with ASD, pointing out that early intervention has notorious results. They also outlined the principles which educational programs may have to improve students with ASD's education, such as intervening as soon as the pupil is diagnosed, small class sizes for the better attention towards students, inclusion of the family in their child's education, amongst others (Myers and Plauché Johnson, 2007). Author Kidd (2008) also highlighted the importance of the role of the family within the education of a child with ASD, in which the mother's supportive behaviour could enhance her child's education. Finally, it has been noted that ensuring a student's smooth transition from the home life into the school experience can have tremendous importance in how students with ASD will be both willing to learn and be able to view their education in a positive light (Marsh *et al.*, 2017).

1.6.2.4. ASD in the Chilean Education System

In Chile, students with ASD are granted education under Decree 170 of the Law 20.201. The amount of students with ASD in the Chilean context is a matter which has been consistently studied. According to González *et al.* (2019), there is a higher prevalence of male students with ASD rather than females with the disorder. Their study also stated that the symptomatology in Chilean children with ASD is mostly found under a moderate state (47.7%), whereas children with mild and severe ASD have a rate of 34.1% and 18.2% respectively (González *et al.*, 2019).

Similarly to the case of ADD/ADHD, the existing literature regarding ASD in Chile and in its educational context is lacking. Researchers have been focusing solely on either prevalence of the disorder within the country's population or neurological aspects. An example of this is De Ferrari's study which supposedly shows there is a link between early embryonic development and the differentiated moulding of a brain, which would cause the individual to live with ASD (Xinhuanet, 2018).

There is a new research focus on ASD in education concerning the link between the student's learning performance and their support system. Hartmann *et al.* (2018) looked into the family dynamic as a variable for ASD development and concluded that further research was needed on the field. Likewise, another study on students with ASD and the improvement of their oral assessments concluded that any educational intervention "... for people with ASD is to be successful then collaboration with parents or caregivers is essential" (Orellana et al., 2019, p. e44). The aforementioned examples proved that Chilean literature strongly associates ASD to a family matter, which provides an insight as to how Chilean authors

perceive ASD. Although some studies were mentioned, the lack of research on ASD within the Chilean educational setting is alarming.

1.7. Selection of SEN types.

This research has chosen to work with ADD/ADHD and ASD for a number of reasons. Statistically, such special needs are the most common amongst students in the Chilean context. According to MINEDUC (2015), out of the entire student population, there are 12.6% of students with ADD/ADHD, and 0,6% of students with ASD. Although numerically it seems like few, there is an important number of ADHD-ASD students inside Chilean classrooms. An important reminder is that the statistics provided by MINEDUC only take into consideration the students who have been diagnosed, so the number of students with either ASD or ADHD could be larger than expected.

Moreover, the desire to gamify English classes with SEN considerations in Chile has also been rooted in the statement that videogames are an asset for the learning of students with SEN. Ern (2014) has persisted on his view that videogames are suitable educational tools, also proving that they are useful for SEN as he conducted research using participants with ASD. He expressed that "it is more than reasonable to apply video games as intervention methods, as they rely on visual cues" (Ern, 2014, p. 4). The author also stated the following regarding videogame application on individuals with ASD:

> "Returning to the issue of treatment for autistic children, the implementation of these game-methods seems highly feasible. To begin with, serious games and gamification function as powerful tools for the development of social, cognitive and psychological abilities" (p. 4).

Finally, the decision to select the SEN types chosen was also influenced by the desire to revise how the Chilean education system has treated students with SENs. Despite the creation and implementations of several federal laws which overlook SEN, the reality of Chilean education shows the existence of a lack of support and understanding of SEN inside

schools. Likewise, teachers are not properly trained considering the wide array of different special needs amongst students.

Chapter 2: Gamification

2.1. Definition of Gamification

To introduce the concept of Gamification, it is important to point out that there has been an extensive debate about whether this term corresponds to a theory-based approach or just a research trend. First, gamification has been considered as multiple concepts, such as a paradigm (Kankanhalli et al., 2012), a methodical process (Scolari, 2013) and an approach (Herzig et al., 2012). However, Simôes, Díaz, and Fernandez (2013), and more recently Dicheva, Dichev, Agri and Angelova (2015), have presented Gamification as a "trend"; also pointing out that it has not been explored enough yet, therefore there is no explicit or concrete way to apply it effectively. Nonetheless, the term Gamification will be explored here as an approach due to its groundbreaking status and the vast progress it has achieved in terms of academic support during the last seven years.

There have been many related yet not similar definitions of gamification. One of the first definitions is given by the videogames journalist Daniel Floyd on the YouTube channel Extra Credit, in which he states that gamification is "the idea of taking the principles of play, the things we have learned in three decades of making videogames and using them to make real-life activities more engaging..." (Floyd, 2012). A later definition of gamification referred to the term as "the process of game-thinking and game mechanics to engage users and solve problems" (Arnold, 2014, p. 34). Although it is a quite complete definition, its application is limited exclusively for "users". Another frequent definition of gamification is given by Brian Arnold, who defined it as "the process of using gaming methods and mechanics in a non-gaming environment to motivate customers and employees" (Arnold, 2014, p. 32). However, this definition lacks the idea that videogames mechanics and methods are not the only features taken from videogames in this process. Thus, in this literature review, gamification is considered as a process and technique of both engagement/motivation and

improvement/support on different non-gaming environments by the use of a variety of game elements.

Dicheva et al. (2015) states that there are two major elements of interaction that stand out from the rest when referring to the sensation of playing: mechanics and dynamics. First of all, the term mechanics refers to the relation between an event and the result of it. For instance, a basic mechanic in cards games would be that "to declare that you have finished your turn, you have to take a card from the deck", while in videogames, the mechanic would be "press the A button to take a card". Furthermore, this concept tends to be misunderstood with "constants" or "badges". Whereas a constant is a direct relationship between the gaming experience and the rules; a badge is a scoring system implicit in the game.

Consequently, it is important to declare that dynamics is a complete stand-alone concept. This term is frequently referred to as the interactions and explicit negotiations between players. However, it can also represent the objectives and results of the gaming process. For example, in Pictionary, the game dynamic consists in every player trying to be the first ones to get to the end of the board; in videogames, the basic form of dynamic is "to get to the end of the stage to win the game". Thus, it could be said that dynamics are macro elements in the game, while mechanics are microelements in the game.

2.2. History of Gamification

The history of Gamification as an approach could be divided into different stages now will be described.

2.2.1. Game Exploration

The action of playing has been inherent to humans from the beginnings of human register. According to Huizinga (1938), game theory -although recently depicted- has existed from the first human attempts to communicate. It is often determined as an instinctive to establish interactions with similar beings through the application of basic interchanges. It has been registered that every species on earth has or attempts behaviours that might be

considered as entertainment, considering that it is scientifically impossible to determine the consciousness of this act (Beach, 1945). Thus, the intrinsic nature of games in humans is completely acceptable by experts in modern research (Dicheva et al., 2015; Ma. Kumar, 2016).

As the growth of the industrialisation era began to take place, productivity and work became top priorities. Hence, games began to be used as gadgets of productivity and fulfilment during the beginning of the 20th century. Employers used to utilise stamps produced by the S&H Green Stamps Company during 1896 as a reward for loyal customers (Denton, 2014). Moreover, the newly founded organisation of the Boy Scouts occupied similar badges as a reward for accomplished deeds in the 1900s (Denton, 2014).

Many attempts to differentiate the essence of games were made through research. There have been two major concepts in the theory about games that must be described for the understanding of further theory which are the terms *Play* and *Game*. Doctor Winnicott provided the difference between both concepts during the early 70s. On the one hand, Play refers to the deliberate action of entertaining yourself by the application of any type of enjoyment. On the other hand, Game refers to a process in which some rites are executed in order to develop a concrete ludified context supported by rules. According to Winnicott, the latter process has to always imply a certain meaning, while playing is only deliberate (Winnicott, 1971). In addition, Winnicott refers to both processes as stationary, as his psychoanalytic analysis determined that play is an instance frequented in early life, while Game is a negotiation constructed in later ages (Martin, 2012).

Following Winnicott's contribution, the 70s provided more refinement to the nature of games as more than a means of entertainment. In 1973, author Charles Coonradt released his book named "*The Game of Work*", which navigates the productivity levels of the US during

those times. Coonradt (1973) established the use of games as the solution for employee engagement, in which individuals would use games and sports to improve efficiency in the workplace. Moreover, in 1978, the use of games transformed with the creation of the very first Multi-User Dungeon Game (herein MUD). Created and developed by students Roy Trubshaw and Richard Bartle from the University of Essex, MUD was the pioneer multi-user videogame in the world and the reason behind the further developed social online gaming trend (Denton, 2014).

2.2.2. Edutainment era

Since 1980, gamification started to be perceived as a focus which should be used in the educational setting. This idea came from Thomas Malone who published a book called *"What Makes Things Fun to Learn: A Study of Intrinsically Motivating Computer Games"*. In his work, he makes references to classifying entertainment into education. Malone was the first author in the existing literature to view games as an educational tool, which paved the way to the current line of research.

Malone conducted a series of studies to understand the reasoning behind computer games being appealing to students and how such instances of fun activities could translate into an educational context. The studies conducted in the city of California comprised the analysis of data taken from 65 students playing diverse computer games and some of their variants to see what was appealing in them. From these exercises, Malone stipulated that three factors were key in making a computer game appealing and fun to the students; Challenge, fantasy and curiosity (Malone, 1980).

Therefore, Malone explains that to consider a computer game as fun, it has to be challenging, which may be possible if there is a clear goal. The author adds that for a computer game to be challenging it should also have a difficulty level with clear goals to

each one, as well as hidden information, so that students' curiosity may be triggered and thus contribute to the challenge of the game. Also, a game needs a sense of randomness to make the outcome of the game uncertain. As stated before, fantasy is another element that may be essential for students to consider a game fun and appealing. The author highlights that "a fantasy world is more familiar to the student than the skill being learned" (Malone, 1980, p. 59). Last, Malone presents curiosity as an important factor in the engaging of students. According to his work, there are several specific principles for the design of a game that should be met in order to appeal to the students' curiosity like informative feedback that is surprising by the help of randomness, as it should not be revealed to students that their knowledge is incomplete or incorrect but should help them see how to change their knowledge to be more complete (Malone, 1980).

After Malone defined the focus of gamification into education, author de Quincey continued such line of research. In 1986, Paul de Quincey described different softwares and their roles in computer-assisted language learning (herein CALL). In his work, De Quincey states that "The computer's strengths lie not in its ability to instruct but in its capacity to act as a powerful and interactive stimulator of learning activity" (de Quincey, 1986, p. 56) as the teaching or instructing process would always befall in the teacher. The author also mentions that the role of a computer should be in classrooms where the language to be practised has already been presented, as what is important is that the student gets to practise in a meaningful and motivating environment (de Quincey, 1986). Although the uses of computer-generated activities in the classroom vary (de Quincey, 1986), the author warns to "guard against the indiscriminate use of such techniques where solving the task assumes a greater importance than the linguistic processes used to achieve the solution to the task." (de Quincey, 1986, p. 61.)

2.2.3. Gamification establishment

Throughout the 1990s, gamification was viewed under the radar of videogames. Due to the creation of the Nintendo Entertainment System (NES) as a videogame console in the 90s, the use of videogames became explosive and widely recognised in every household, which signified the beginning of the gamer era (Denton, 2014). Additionally, Dr Richard Bartle published *"Who Plays MUAs?"* in 1996. Referring to games related to Multi-Universe Adventures, Bartle categorises the different types of players in videogames, which he ranks into the categories of achievers, explorers, socialisers and killers. Bartle wanted to deepen the psychology of gamers as a means of research (Bartle, 1996), as well as creating a model which could be used for later studies.

Although gamification had been thoroughly described and put into practice for decades at this point, it was not until the 2000s that the term gamification was finally coined. In 2003, British computer programmer Nick Pelling coined the concept as part of his one-man consultancy which "specialised in gamification" (Pelling, 2003). Relating it to his business context, Pelling provided the term of gamification being utilised for the very first time, yet not in a proper document. Nonetheless, the coining of gamification has also been attributed to authors David Edery and Ethan Mollick in October who used it for the first time in the book *Changing the Game* (2008). Nonetheless, the topic of the said establishment was in the context of business (Edery and Mollick, 2008), mimicking Pelling's use for the word.

In 2009, game designer and producer Kellee Santiago presented a TEDxTalk at the University of Southern California, in which she stated that videogames are Art. She began referring to Roger Ebert's point into the reason of videogames standing aside from an artistic depiction, in which Ebert stated that "... to my knowledge, no one in or out of the field has been able to cite a game worthy of comparison with the great dramatists, poets, filmmakers, novelists and composers" (Ebert, 2010). Consequently, Santiago explained with different exhibits on how videogames might be compared and cited in the said respect. By the end of her speech, Santiago showed her proposal of the possible topics in which professionals must work to confirm publicly their position as the art medium of the 21st century (USC Stevens

Center of Innovation, 2010). A year after, Ebert reconsidered their posture explaining that he "should not have written that entry without being more familiar with the actual experience of video games" (Ebert, 2011).

Regardless of the ongoing changes throughout time, gamification has been used in the labour environment (Kumar, 2015); marketing business (Arnold, 2014) and education (Kiryakova et al., 2014) for the past decades. In spite of the multiple uses of gamification, academics and teachers from all over the world have stated that many amounts of effective possibilities of this process in education (Nah et al., 2014). However, there were only a few substantial empirical pieces of research about it up to 2015 (Dicheva et al., 2015, p. 10). According to Dicheva (2015), there were more than 1.647 papers focused on Gamification in different databases by 2015. This is a considerable difference with the results available before 2010 when the number of available papers was less than one hundred. Nonetheless, in 2018, a revision of empirical literature sustained the thesis that Gamification, specifically in Education has been "widely founded in theoretical analysis" with sufficient evidence to consider it a valid source (Majuri et al., 2018).

In light of the above, there is a gap between the theory behind this approach and studies on specific contexts that support it. Although Gamification in itself has grown exponentially over the last decades, its use in education needs to be refined urgently. Specifically, more literature, as well as resources are needed to gamify EFL classrooms around the world properly, especially in the Chilean context.

2.3. Gamification in Education

As aforementioned, gamification has been widely considered as a tool for education. Since Malone imposed the use of computer games inside classrooms, gamification has slowly but effectively crawled its content into the support in education. Therefore, the relevance of analysing gamification within the educational context becomes necessary in the present research.

First, it is important to outline the reasons behind the use of gamification in education. Gamification has been widely used in connection with engagement and motivation, as well as pointing out that such game mechanics throughout time have become so familiar due to playing videogames that individuals already know the procedures, therefore enhancing the learning experience (Kiryakova et al., 2014). The enhancement of student engagement also aims in battling against some faults in the system. Huang and Soman state that "... the reasons for dropouts or low performance include boredom or lack of engagement, a pattern of escalating absenteeism where each absence makes the person less willing to return to school ..." (2013, p. 5). By gamifying the classrooms, students are both able to be interested in learning, as well as becoming involved in school (Lee and Hammer, 2011); therefore, the risk of inattentiveness and demotivation decreases from the beginning of the class.

Moreover, gamification increases curiosity and participation in students' own learning. Gee (2008) declares that schools tend to expect students to do as they are told and that through a new dynamic like gamification, students can wonder about the benefits of their work as a whole. Likewise, gamification "... gives students clear, actionable tasks and promises them immediate rewards instead of vague long-term benefits. In the best-designed games, the reward for solving a problem is a harder problem" (Lee and Hammer, 2011, p. 3).

Additionally, there must be a reference as to how the gamification of a classroom can occur. When referring to Gamification in education, it is relevant to establish which elements permit improvements in pedagogical practices. According to author Dicheva, every game element has parallelisms in literature which make them reliable in their application in education (Dicheva, 2015). Authors Kiryakova, Angelova and Yordanova (2014) explain that a process needs to ensue in order to gamify classrooms. Firstly, the characteristics of the students and their skills set need to be taken into consideration, as well as defining clear and suitable learning objectives. Mostly, authors relate the use of gamification as every-day teaching, which consists of proper lesson planning, the only difference is that they have gamification considerations in mind.

Gamification can happen inside the classroom through a wide variety of forms. It can be used to award students' successful progress in the in-class activities, as well as being used

in activities in which competition amongst students may add to the class (Holloway, 2018). For teaching purposes, it can also be used in the grading of assignments. For instance, professor Lee Sheldon from the University of Indiana prefers the use of videogames rather than a traditional grading system. Sheldon uses a digital videogame in which students gain points per activity accomplished, and the students are graded based upon the number of points they are able to obtain (Tito, 2010). Professor Sheldon is an example of how gamification can contribute to the teaching-learning process.

Furthermore, different approaches stand as possible practices in the development of gamification in education in the existing literature. The first one being Edutainment, which is conceived as the utilization of games to engage and mix class content with game approximations. Secondly, there is Edugames, which refers to the competitive aspect of games applied in the classroom. There is also a Game-based class/project, which was coined as the transformation of the nature of a class into a completely ludified environment. Lastly, "Serious Games" are defined as the use of software and products completely designed for a non-ludified context (Majuri et al., 2018, p. 12).

Moreover, there is a difference between two practices that are frequent in the utilization of games in non-ludified contexts. While Serious Games refers to products established through their rules to improve or vary a certain context; Serious Gaming refers to the application of rites or parts of rites related to games in non-ludified context (Jenkins, 2009). For instance, *Oráculo Matemágico* (2016) is a Peruvian game-like application specially designed for the practice of math problems; while Monopoly is a board game that could be utilized as an example of negotiations that apply math concepts.

Recently, the work of Doctor Jonna Koivisto, Doctor Juho Hammari and researcher Jenni Majuri (2018) addressed a systematic analysis on the review of Empirical Literature. Majuri *et al.* (2018) highlighted that more studies are needed in the category of gamification in education as a whole. Although, after an analysis on a consistent amount of publications, they concluded that there is sufficient theoretical background to consider Gamification as a positive practice in quantitative terms. Nevertheless, the majority of works aim at a

behavioural perspective approach, which suggests that more socially oriented quantitative affordances in context should be carried by researchers interested in the topic. It is also suggested that the focus of each new research carried out must focus on specific elements of education rather than general overviews of Gamification application (Majuri et al., 2018).

2.4. Gamification in the teaching and learning of English as a Foreign Language (EFL)

As previously established, gamification has earned its place as an educational tool, capable of assisting all types of learning. Therefore, it is expected to utilise the means of gamification within the English as a Foreign Language class (herein EFL). Although the beginning of gamified EFL classes has not been identified, gamification has been used in EFL classes for the past few years. However, such use has been widely linked to the teaching and learning of English as a second language (herein ESL), therefore most of the studies are also more connected to ESL.

Generally, gamification has been highlighted in the EFL classroom as a source of motivation for L2 learners. Author Figueroa (2015) states that L2 learners are attracted to attractive and effective learning, especially if the technology is involved. He also expresses that "... Gamification offers the learners an opportunity to interact among them as it's implied in a social game" (Figueroa, 2015, p. 43). Likewise, Dr Healey from the University of Oregon (2016) alludes to the students' exploration of creativity through gamification, as the playthroughs, which is the act, or a recording, of playing a game from start to finish, of those games can improve motivation through an improvement in imagination.

In addition, gamification allows EFL students to manage their skills. According to a study conducted in 2018 by authors Alfulaih and Elsayed on Saudi female EFL students for the improvement of their speaking abilities, the use of games changes the approach inside the classrooms. It is expressed that gamification "[...] turns the process of learning to speak English from a teacher-directed to a communicative-directed style" (Alfulaih and Elsayed, 2018, p. 69), as games allow students to use their English and therefore develop their

speaking skills. Ybarra and Green (2003) also detailed how computer games can aid in the advancement of students' reading and writing skills, as well as EFL students' grammar skills. However, the authors insist that games are not a substitute for proper teaching, only a tool. Finally, games also allow students to engage actively in their own learning by attesting to their learning process (Yuruk, 2019).

Finally, more advantages have been noted for the use of gamification in EFL classrooms. Michos (2017) provided an intricate list of assets which the use of games brings into the learning of EFL, which he details as following:

> "◆ Modifies the mood within the classroom;
> ◆ Increases learners' feeling of happiness;
> ◆ Provides breaks from learner's fatigue;
> ◆ Increases motivation and improve attention;
> ◆ Increases student's engagements in the classroom activities;
> ◆ Stimulates a goal-oriented activity;
> ◆ Makes learning fun "
>
> (Michos, 2017, pp.512-513)

2.5. Gamification in Chile

Considering what has been stated during the present study, gamification has been presented as a suitable educational tool in different contexts, considering their prior characteristics, as well as the progressive nature that has proved to explore further in the production and enhancement of the student's learning. In spite of the world widely proved on the effectiveness of this practice, Chile has yet to utilise games sensibly, in which the lack of research within the Chilean context regarding gamification is alarming.

Regardless of the lack of research, gamification has been recently used in Chile. Although it is unclear to define the time of arrival of gamification into the country, there have been reports of marketing companies using it as a way of improving employee's learning

process and morale (Rivera, 2012). Companies such as Gamifik and Gamiphy are examples of Chilean companies looking to use gamification in benefit of their workers' learning (Tirado, 2019).

As previously mentioned, there is a palpable absence of Chilean research on the topic of gamification. According to the records held by *Comisión Nacional de Investigación Científica y Tecnológica*[3] (herein CONICYT), there have been only 13 studies on gamification conducted in the country, the first one being registered in 2014 (CONICYT, 2019). More specifically, there have been even fewer numbers of studies concerning gamification into the Chilean educational context, with only one research regarding education. Having stated that, it is worth mentioning that such study is merely experimental.

Through the extents of this research, the single piece of work that proves the efficacy of gamification in Chile is by authors Roberto Araya, Elena Arias Ortiz, Nicolas Bottan and Julian Cristia. The focus of the study is the use of gamification in the teaching and learning of Maths inside Chilean classrooms of vulnerable context through their own technological instrument. The main objective was to design a program that could generate large increases in the learning of Math among students who belong to low socioeconomic levels (Araya *et al.*, 2019).

The objective was to be obtained through the creation and use of the ConectaIdeas program, an online platform which was developed and put to test from 2011 up to 2016. In 2017, the experimental evaluation was conducted in 24 schools in Santiago, where students came from low-income status. The students were prepared to use the platform during two 90-minute classes of the existing school lessons per week, one class being a replacement of the traditional Math class and the other being Math instructional time conducted by the CIAE team. The project was connected with different gamification strategies, such as students' motivation, the conveyance that intelligence is malleable and can, therefore, be improved over time, group motivation and within-class cooperation, to name a few (Araya *et al.*, 2019).

[3] National Commission of scientific and technological research

The main results showed that the project did in fact allow for improvement on the students' learning of Maths. Regarding the positive outcomes, the project promoted the ideal that intelligence can be improved, alongside promoting the use of computers for the learning of Maths in the classroom. On the contrary, the study also encountered many negative points, such as increasing the students' level of anxiety related to learning Maths as well as the students' reduction of teamwork in favour of individual work. Likewise, the authors briefly mentioned that such program could be utilised for language learning purposes, yet they failed to provide any example of how it could be conducted. The research conducted by Ayara *et al* has been groundbreaking for the Chilean context, as it both put gamification into both perspective and practice.

As a whole, the topic of gamification both in Chile and within the Chilean educational system is severely lacking in research and empirical data. The use of videogames and games of the sorts has been already identified as extremely beneficial, therefore the school system in Chile may want to apply it as a means of improvement as well as preventing the advancement of the education system of the country in general.

Chapter 3: Inclusion

3.1. Definition of Inclusion

The achievement of Inclusion in worldly issues has been a top priority for the past couple of years after the civil rights movement pioneered in the 1950s (Connor and Goldmansour, 2012). However, there are far few authors within the literature who have provided an explicit definition of the word, as the concept is difficult to grasp. Here is a summarised version of the typology of ways people think about inclusion (Ainscow et al., 2006):

> 1. Inclusion as a concern with disabled students and others categorised as 'having special educational needs'.
> 2. Inclusion as a response to disciplinary exclusion.
> 3. Inclusion in relation to all groups seen as being vulnerable to exclusion.
> 4. Inclusion as developing the school for all.
> 5. Inclusion as 'Education for All'.
> 6. Inclusion as a principled approach to education and society.
>
> (p.15)

Ainscow *et al.* (2006) explained that the meaning of inclusion is dependent on the context in which it is needed, therefore there is an array of definitions of inclusion around the world. Nonetheless, Ainscow has stated that inclusion possesses a number of features which allows for distinguishment. Hereby, inclusion is viewed as an ongoing process which has the main objectives of both identifying and removing barriers, as inclusion is concerned with the presence, participation and achievement of all students but emphasising those under marginalisation, exclusion or underachievement (Ainscow, 2007). Following such perspective, inclusion is seen as a process of ensuring that all individuals are active valued members of the society (Cribb and Gewirtz, 2003).

Although the establishment of inclusion is highly regarded throughout all aspects of life, inclusion has been specifically linked to SENs. Hodkinson noticed that "inclusion was being conceptualised as relating solely to children with SEN and the relationships these individuals had with mainstream schools" (2011, p. 181). The continuation of the perception of inclusion related to deficit, in which the use of the term "disability" allows for more barriers (Braunsteiner and Mariano-Lapidus, 2014). Furthermore, Muñoz (2014) states that the entire point of inclusion is that students with SEN are people, therefore deserve to be seen as equals and not as problems. Therefore, inclusion has been identified as a process of identifications and removal of barriers to establish all members of society as valuable. The links between inclusion and SEN issues are palpable, and the present research project will deepen into those topics.

3.2. Inclusion in education

As aforementioned, inclusion is strongly associated with education. The right to be educated is stated in the UNESCO Convention against Discrimination in Education of 1960, which "prohibits any exclusion from, or limitation to, educational opportunities on the basis of socially-ascribed or perceived differences, such as by sex, ethnic/social origin, language, religion, nationality, economic condition, ability" (UNESCO, 1960). Likewise, the United Nations Children's Fund (herein UNICEF) established the Convention on the Rights of Persons with Disabilities. On Article 24, it is states that it "recognizes the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunity, State Parties shall ensure an inclusive education system at all levels and lifelong learning" (UNICEF, 2006, p. 14).

More importantly, the Universal Declaration of Human Rights in 1948 proclaimed education was a civil right as following:

> Everyone has the right to education... Education shall be directed to the full development of human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship

> among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace (United Nations, 1948, p.54).

The concept of inclusion in education has been linked to the establishment of the term of inclusive education. As a term, inclusive education has been understood as the education which "accommodates all students whatever their abilities or requirements, and at all levels – pre-school, primary, secondary, tertiary, vocational and life-long learning" (UNICEF, 2006, p. 3). Becker (2019) also notes that inclusive education involves different and diverse learning styles within the same classroom. In addition, inclusive education values students' diversity and uniqueness, as well as highlights the importance of students' sense of safety within their learning to set through the community's active involvement and thoughtful support (Becker, 2019).

In order to provide a truthfully inclusive education in schools, several factors must be taken into consideration. There are three dimensions which have been proposed by Ainscow et al. (2002) as a way for every school to provide an inclusive education. The first dimension is related to creating inclusive cultures, meaning that the school community must be reorganised and must establish inclusive values. Secondly, the school needs to produce inclusive policies, referring to creating policies for all members of the community as well as organising and inspiring support for students' diversity. Lastly, schools must evolve inclusive practices, in which the learning and resources must be upgraded (Ainscow et al., 2002).

Further guidelines for the achievement of an inclusive education have been proposed. UNESCO (2005) has stated that a strong community is willing to modify the existing curricula for a more fittingly inclusive one, as well as to reflect upon the empowering effects which inclusion may manifest in different communities. The National Council for Special Education of Ireland (herein NCSE) has detailed a number of principles for inclusion, such as the whole community's responsibility in improving inclusion, the reflection of the diversity found in the school and amongst students, and supporting the community's involvement in inclusive practices (NCSE, 2011).

Finally, it is relevant to reiterate the commitment of the present piece of work with inclusion, as improving the country's inclusion process is amongst the objectives and priorities of this research.

3.3. Inclusion in Chilean education

Chile has slowly become a country which ensures a fair chance for everyone. Regarding education, the country has began to ensure that everyone has an opportunity to obtain a proper education. Although many laws have been previously declared, Law N° 20.845 or best known as the Inclusion Act has ensured that every citizen can access to the educational system (MINEDUC, 2015). Through the implementation of different laws or the application of international approaches, the Chilean educational system has become a more inclusive one.

Chilean education is attempting to become more inclusive due to the needs and number of people who live with a SEN. On a national level, as of 2012, there were approximately 2.05 million of citizens who have a special educational need (FND, National Foundation for People with Disabilities, 2012), therefore the advancement of an inclusive education is needed. Moreover, the enactment of Decrees 83 and 170 (Decreto 83, 2015; Decreto 170, 2010) has imposed the right for people with SENs to have an education.

Regarding the steps towards an inclusive education, Chile has provided its very own School Integration Program (herein PIE, the Spanish acronym). For the execution of PIE, a number of features must be fully functioning. Teachers in the Chilean educational system have the duty of providing students with a safe and inclusive learning setting, which needs to be supported by the Government through sources and the improvement of links between community and social services (Soto, 2018). Lastly, authors have noted that factors like "Accessibility, teacher support, and the participation of students and their families are fundamental pillars for advancing towards a fully inclusive education" (Tamayo *et al.*, 2017, p. 115).

Although Chilean education has made immense advancements towards becoming inclusive, there is still a long way to do. For example, there needs to be more resources for educators and the school community alike, as well as immersing the families into their child's education process and enhancing students relationships.

Chapter 4: State of the Art

4.1. Special Education Needs

When referring to Special Education Needs and their status within Chilean education, years of legislature must be taken into consideration to understand the state of current affairs in this context. According to research analyst for the National Library of Congress, Mauricio Holz, in his report of the state of Special Education in Chile, presented to the Chilean Parliament, the educational system has only two options when it comes to SENs. The options are either a special school for students with sensory, intellectual, motor, communication and relationship disabilities and/or specific language disorders or a school which works with PIE program, for students with learning difficulties or impairments (National Library of Congress, 2018). Thus far, Chilean schools can include a PIE program or not, as it is not a mandatory project in the country.

According to Law 01 (Decreto 1, 1998), there are four existing types of special education considered within educational institutions with PIE considerations in Chile at the moment. The first type consists on the students' participation in all school activities, in which they will be assisted by special education teachers with plenty of resources. The second type refers to student's involvement in regular classes, but not in classes which need changes in the curricula, the student therefore receives specialised support inside the classroom. The third type refers to classrooms where the students take part in some learning areas with their regular class, but still need to attend a differentiated room, generally called a resources room, where an adapted curriculum to their special educational needs is applied. Lastly, in the fourth type the students work with a special curriculum adapted to their needs, attending classes in the resources room, thus sharing with their classmates only during recesses, official ceremonies and extra-curricular activities (as cited in López et al., 2014, p. 3).

According to the case study conducted by researcher Ximena Muñoz, one of the teachers' main obstacles when trying to achieve a suitable integration process is the excessive quantity of students per classroom and having more than one student that needs to be

integrated per class (Muñoz, 2014, p. 10). Teachers also manifested that they generally must adapt the different curriculums and perform custom classes for students with SEN, they also highlight the importance of teaching students with disabilities in differentiated rooms so they can learn more effectively which is considered to be segregationist (Muñoz, 2014).

4.2. Gamification

To begin with, Dr Leung and Dr Plunskwik have been prominent figures of gamification inside classrooms over the last few years. Doctor Eleanor Leung and Doctor Elizabeth Plunskwik are the current leaders of Iron Range Engineering (IRE), a prestigious faculty from the Minnesota State University, since 2017. Drs Leung and Plunskwik have come to a number of crucial conclusions of the application of Gamification in education. In 2018, both authors claimed an urgent need to build new cornerstones in the bases of current "electrical-focused students" (i.e. students from IRE). According to them, a teacher-centred classroom has both created and influenced a student's profile focused on the application of repetition rather than the development of individual active learning, as well as a lack of self determination in the searching for further knowledge. Their response to said gap was a new focus on the curriculum based on the development of personal long-term projects and longitudinal testing. Their search for new approaches to implement such modifications led to their interest in the use of Gamification (Leung, 2018).

Drs Leung and Plunskwik exposed the results of their research in the annual conference of the American Society for Engineering Education. The report states not only the effectiveness of said practice in the IRE curriculum but also states a series of concrete suggestions for future applications of gamification in different contexts, those suggestions being the following: in the first place, the use of a gamified assistance tool should not use more than 20 percent of the class, which is supported by the clear distinction between students that get involved and engaged in the content and the ones that used the videogame as a distraction method; secondly, the awareness of fatigue should be applied in the preparation of the class, there is an actual possibility that some students involved in the

activity might feel exhausted or sick after paying utter attention to a screen; in third place, boredom should never be considered as a central antagonist of the lesson, although some students might get bored during the application of a gamified tool, it is not the duty of teachers to maintain them entertained, but engaged (Leung, 2018).

As a result, the works of Dr Leung and Dr Plunskwik made groundbreaking discoveries by stating that the use of videogames in the classroom could not be found in other pieces of literature because of the extent of their research. Their concrete recommendations, as well as their confirmation on the effectiveness of the coherent use of video games in the classroom, are considered in the former application of activities related to gamification. Although their work is focused on a project-based experimental curriculum in engineer studies, their discoveries are coherent to this investigation in terms of practical development and understanding of circumstances. Thus, following both authors' suggestions, it is recommended to explore the use of gamification in different contexts, as well as becoming aware of the consequences and advantages of the use of new technologies in teaching (Leung, 2018).

Following the line of research, Javier Torrente, from University College of London and Complutense University of Madrid, along with Manuel Freire, Pablo Moreno-Ger and Baltasar Fernández-Manjón, also from Complutense University of Madrid, have worked on the creation and development of educational electronic platforms or E-learning platforms. The authors wrote their paper *"Evaluation of Semi-automatically Generated Accessible Interfaces for Educational Games"*, which states that there is a necessity to improve the level of accessibility of educational games or, as the authors refer to them, serious games (Torrente *et al.*, 2015). The authors expressed that "One of the most relevant causes of the lack of accessibility in serious games is the non-trivial cost of implementing accessibility into an existing game, an effort-consuming process that may affect multiple aspects of the game" (Torrente, Freire, Moreno-Ger and Fernández-Manjón, 2015, p. 2)

According to the authors, the cost of implementing accessibility into an already existing game is an effort- consuming process that may affect multiple aspects of a game such as its design, art, language, difficulty, gameplay mechanics and the underlying technology needed for the game (Torrente et al., 2015). They have also noted that game accessibility solutions tend to be game-specific and therefore hard to scale and reuse across games. And that is partly why it is rare to find educational games that consider accessibility (Torrente et al., 2015). Thus, their goal was to provide game developers software tools that take care of these processes in order to make these games more accessible.

4.3 Gamification with SEN considerations

One of the highly relevant pieces of research was produced by author Anna Ern in 2014. From the University of Twente, Ern presented in her study *"The use of gamification and serious games within interventions for children with autism spectrum disorder"*, research on the state of the arts of game-methods aimed to treat children within the Autism Spectrum Disorder by focusing on the characteristics, the targeted ability, the supporting material and the effectiveness of the methods that had already been implemented in the past.

Ern (2014) focuses on the treatment of kids with ASD via gamified methods, mostly referred to as serious games. After an online database search, the author establishes that there were four subcategories of behaviour/or abilities, that were aimed to be changed by the use of the aforementioned games; behaviour related to attention, social interaction and communication, facial behaviour and abilities for every-day use. According to the author, all the interventions that were held when applying these gamified methods "applied distinct rules which enable the player to understand and to win the game" (Ern, 2014, p. 22). The importance of this finding lays in the relation that the players create between their winning the game and their own competences leading to the possibility that the acquisition of skills while playing may have a greater impact on the subjects (Ern, 2014). Ern also notes that when most of said interventions took place, the game rules were focused on one at a time in order

to eliminate additional distractions and simplify the use of these games for children within the autistic spectre (Ern, 2014). In addition, Ern proposes that future interventions should focus on the former though it should be researched to what extent it should be present in the treatment of children with ASD (Ern, 2014).

As a means to consider the location to be used when implementing a game as a treatment for children with ASD, one cannot dismiss any over effectiveness as the interventions that took place within a self-determined location did not report effectiveness measures. Either a fixed, external location where disruptive stimuli can be controlled or suppressed, such as a room that remains in the same way as before implementing the game as to reduce the possibility of triggering the children's anxiety levels; or a self-determined location where the users choose a room where they do not feel anxious when they are interacting with the game (Ern, 2014). On this topic, the author suggests for further research to be held. Still, effectiveness could be linked to an additional person, such as a parent or therapist in the room, as five out of six interventions that provided effective measures included one (Ern, 2014). Thus, the author calls for future research because of the limited effectiveness measures already mentioned. The author also states that, even though it is important to focus on communicative skills when talking about treatment for children with ASD, further research should focus on other skills such as attentional or perceptive skills due to their implications on other abilities (Ern, 2014).

Finally, Ern indicates that her study cannot conclude whether serious games are a better way of treatment for children with ASD. However, the study outlines the importance for additional studies with game-methods in order to enable better general conclusions to determine items such as the effectiveness of these games within treatments for children with ASD (Ern, 2014).

Authors Pinedo and Penco from Universidad Autónoma de Aguascalientes in Mexico and Broisin and Muñoz from Université de Toulouse in France have also provided sensible data. The authors united their diverse backgrounds to create a paper on the use of gamification to enhance the learning process of students with special needs. Authors Pinedo, Muñoz,

Broisin and Ponce (2018) presented their paper during the 2018 IEEE Global Engineering Education Conference, which is also known as EDUCON.

The paper in question engages in the use of gamification as a means to improve the literacy of students who have Special Needs. Their main focus was on how to enhance the special education students' progress through gamification, instead of addressing for an all-inclusive practice in all classrooms. The problems encountered inside the special education sector were that teachers were not specialised in using games as means of education, respectively leading to not using them, and the lack of a detailed methodology which thoroughly explains gamification as an interactive source for teachers and students alike.

In order to do so, Pinedo *et al.* (2018) conducted a case study in the state of Aguascalientes, Mexico. The participants of the study comprised teachers from the USAER program (Support Unit for Regular Education) within Aguascalientes. Throughout the qualitative method, the authors questioned the special education teachers concerning their practice and the way they utilise games to educate. Likewise, students from the same program were selected as participants. After selecting ten children and providing a categorisation of their identities and special needs, the students with SENs were instructed to play video games according to their level of skills when reading and writing from a mobile or other type of electrical devices which are available in the app PlayStore. The authors then tested the students' performance on the games and the teachers' responses towards those techniques, as well as assessing the usability of the apps mentioned.

The results showed that students who took part in the project improved their writing and reading skills through the use of games. Moreover, the participants became aware of the usefulness of gamification as a didactic tool for learning, as both teachers and students learnt more about them. Overall, the paper proved that gamification is indeed a powerful tool for the learning process of students who live with a special educational need.

Chapter 5: Methodology

To begin with, this research group both brainstormed and organised the required steps to complete the work ahead. The first choice required the group to discuss which SEN types to include in the research. The group finally selected three of the most common SEN types in Chile according to MINEDUC Statistics (2015) which are Autistic Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD). Due to the nature of the study, we deemed it appropriate to partake in an in-depth mixed and explanatory research. Following the project, the group thoroughly analysed the state of the research in the topics of SEN, Inclusion and Gamification in terms of historical background, application in Chile and its impact in the teaching and learning of English as a Foreign Language. Finally, it was also necessary to learn about the current state of the Chilean educational curriculum.

Consequently, the group had to determine which grade from the Chilean school system to focus on during the research. After a discussion, the group selected the 7th grade level. Using the information found in the MINEDUC website, the contents and objectives belonging to the 7th-grade were the most suitable for the use of a video game with SEN considerations. From all units of the English program, the unit chosen was “Green Issues”, which is the 4th unit of the national curriculum. More specifically, the use of this video game relates to learning objectives numbers 1 and 3 of the Chilean curriculum for the English language.

Moreover, it became necessary for the research group to gather data regarding the perception which teachers have about their experiences and challenges of teaching in a classroom environment with students with SEN, as well as the use of ICTs in the classroom. A survey was designed as the main instrument to obtain said information. The survey was drafted to obtain information about the teachers´ opinions about the use of an inclusive online

videogame to teach English to 7th-grade students in Chile. Both the survey and the teachers' request letter can be found in Appendixes A and B.

5.1. Participants

The only requirement to take part in the survey was to be an English teacher and have a degree in a teaching training program within Chilean jurisdiction. Among the number of participants, thirty-three (33) responded to the survey. Likewise, the survey was answered by teachers from the Valparaiso region to La Araucania region who have been teaching in either private, subsidised or public schools. The survey was posted in the following Facebook groups:

Desarrollo Docente Ingles https://www.facebook.com/desarrollo.docente.ingles/

Profe Datos Oficial - https://www.facebook.com/groups/Profedatos/search/?query=martin%20acosta&epa=SEARCH_BOX

Profesores de Ingles Chile - https://www.facebook.com/Profesores-de-Ingl%C3%A9s-Chile-274723439254185/

I AM A TEACHER (from profe datos) - https://www.facebook.com/groups/273253942740902/?fref=nf

LEARNING COMMUNITY OF CHILEAN TEACHERS OF ENGLISH - https://www.facebook.com/groups/425550997789957/search/?query=martin%20acosta&epa=SEARCH_BOX

5.2. Survey

The research group designed a short survey, aimed to gather both quantitative and some qualitative information about the participants' context, their level of knowledge, interest, and opinion on Gamification and the use of a videogame with SEN considerations.

The survey contained nineteen questions divided into four sections. The first section had three questions aimed to define the teachers' working background, location, type of

school and years of expertise. The second section comprised eight Yes/No questions to collect information on the knowledge, interest, experiences and opinions the participants of the survey have on Gamification and the use of an inclusive video game with SEN considerations. Section three was made up of three open questions directly related to the ones in section two, this time in a more specific and extensive way. Finally, section four was based on a Likert Scale made up of five questions with five different levels or degrees used to express agreement, being "1" the point of most agreement, and "5" the one of most disagreement. The fourth section aimed to gather quantitative data on the opinions teachers have about the effectiveness and viability of the use of an inclusive video game with SEN considerations, taking into account the current national curriculum and context.

5.3. Procedure

After having the information about the selected SEN types and the specific requirements of the students with those SENs, the opinions of the former teachers and the contents obtained in the educational curriculum, the group began to design a videogame according to the data collected. The research group decided that the videogame had to be designed considering every single student within the classroom, regardless of their educational needs.

Once the videogame was designed including the SEN considerations, the group selected two schools to test the videogame. These schools were Colegio Instituto Santa María and Colegio Francisco de Encina. Both establishments were chosen because two members of the research team were carrying out their final Practicum there. The letter of permission to apply the videogame in the schools can be found in Appendix C.

The video game was reproduced on a laptop and a projector respectively in the mentioned schools. Therefore, every student in the class had access to the videogame. In total, the number of students who participated in the research was 44. Before playing the videogame, the students were explained the story of the videogame. They were told that the

protagonists were Sam and E-bot, and that both characters were travelling through Chile. While the students were playing the videogame, a member of the research group was observing them and taking notes on an observation sheet, while another research team member was guiding the videogame experience. To find the observation sheets, see appendix D, D 01 and D 02.

Finally, after implementing the videogame, the group analysed the students' reactions while playing. Overall, the students in both schools reacted positively to the videogame. In both schools, the students took part and seemed to be engaged by the use of our inclusive videogame. Moreover, the purpose of teaching the vocabulary of green issues to students was fulfilled through implementing the videogame.

Chapter 6: Videogame

6.1. Video Game Justification

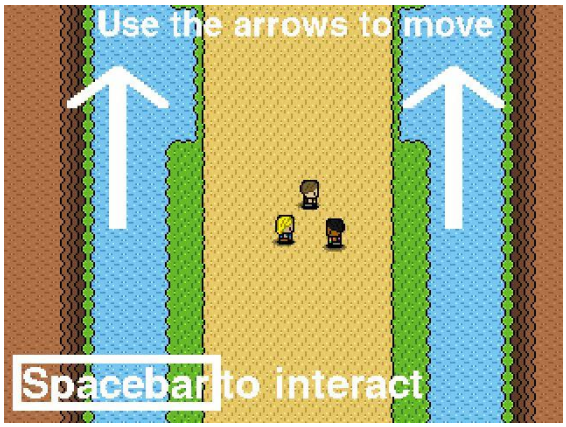
6.1.1. Description

The proposal consists of a videogame which looks to enhance the learning and teaching of English as a second language with SEN considerations in the Chilean educational context. In the game, the exercises dwell on the importance of the identification of natural phenomena around Chile as a way of engaging the learning of English with a geographically familiar setting for students and the importance of taking care of the environment.

This videogame is a Role Play Game (herein RPG) for personal computers, available in an executable and SMC format; therefore, the video game is compatible with Windows, Macintosh, and Linux systems. The executable file requires only 25 megabytes on the hard or solid driver disk, as well as only 100 megabytes of Ram memory during its application. Additionally, the view interface and viewport are adapted with a ratio relation 4:3, thus, the game is compatible with regular projector viewports.

First of all, the concrete description of this videogame is a Role Play Game in which students are able to control a child named Sam, who is involved in a series of events with the company of a robot called E-Bot. The robot suffers from certain malfunctions which allow the protagonist to travel alongside E-Bot through different landscapes of Chile, in which different natural phenomena are observed. Immediately after the appearance of each phenomenon, the robot shows a warning sign. After each warning, E-Bot asks Sam about the natural phenomena occurring before their eyes, in which three options are presented regarding possible answers. The answers are keywords related to natural phenomena, such as flood, wildfire, and earthquake. By choosing the correct answer, the students can move forward in the game, until completing the five exercises.

The video game is observed from a third person's perspective, with a zenith view; which allows the audience to have a broad view of the situations presented during the digital experience. The resolution is 320x240 pixels, which corresponds to a 4:3 ratio configuration, creating a range of attention which makes situations evident on screen and allows pictures with the precise information (Picture 1).



Picture 1

In order to control the protagonist of the game, students can use both the keyboard and the mouse, varying from when each device is required. The basic movements of the character are commanded by the arrows on the keyboard, it allows the character to move through an 8 directions possibility. Alternatively, the video game also responds to the popular "W A S D" configuration, which means that the keys mentioned represent the use of the arrows previously explained (Picture 2). The different items that are relevant in the story are possible to be interacted with by using the spacebar. Finally, after certain specific dialogues, by pressing the enter key students are allowed to choose between three different options, which are selectable by pressing the left click on them. The idea behind the different controlling systems during the experience is to evidence a certain order and understanding of basic instructions in the target language; this purpose is directly connected with the first learning objective of the Chilean 7th grade English curriculum.

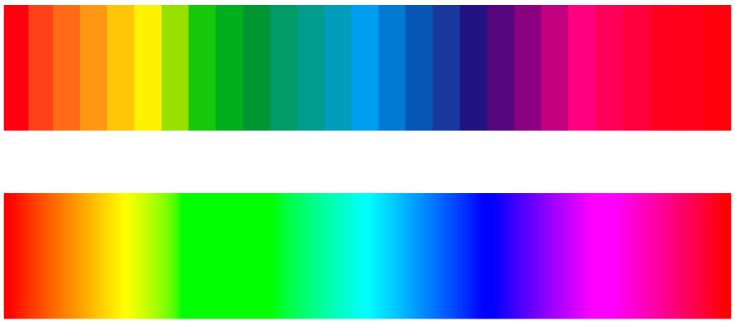
Picture 2.

Regarding the game specifications, this virtual environment can be described as a ten-minute reading adventure in which students act as the protagonist of the text. The third perspective allows players to look at the whole situation they are involved in so to respond properly. As previously mentioned, the characteristics of the game itself allows it to be described as an RPG; this identification is due to its immersive characteristics in the controlling systems, the specification of a role in the objective and premise of the story, and the implications of the decisions players make during the experience. The storytelling of this game could only progress by selecting the concretely correct answers, so this experience corresponds to an interactive controlled experience.

6.1.2. Visuals

The game emulates a 16 bits system like videogames from the 1990s, due to the 2D models used in the sprites (which corresponds to the pictures/models used to represent a character or object in the videogame), as well as the lightly diverse 8-bits colour palette selected. Nowadays, computers allow designers to build fully rendered 3D models with a full 32-bits colour scale; however, the emulation of previous systems is coherent to the simplification of elements as well as the management of a closed space with SEN considerations. Thus, the visuals of this videogame were selected to not distract or interfere with the proper development of a class in the previously stated context.

The difference between 8-bits and 32-bits colour scale is marked by the amount of digits in the binary code of the storage of colours allowed per pixel, the 1-bit colour palette, for example, storages 2 colours (Campbell *et al.*, 1986, p. 216). In other words, the 8-bits system has 8 digits of binary code, each digit could be represented with the values 1 or 0; so the number of colours an 8-bits system contains is represented by the following equation: $X = 2^8$, which means 256 colours (Picture 3). Additionally, this videogame does not allow any type of anti-aliasing, which is the process of mixing the edges of one pixel with another to build a smoother picture. External monitors and projectors generally produce an anti aliasing picture to process digital images, this effect could not be controlled by applications before its exposition with the specific hardware.



Picture 3. Above: 8-bits palette; Below: 16-bits palette.

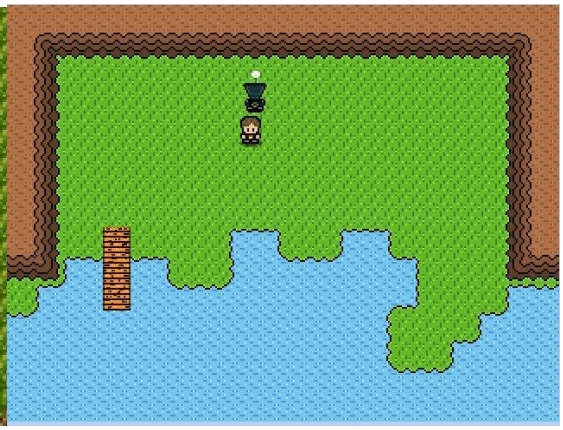
Finally, it is coherent to highlight the fact that this dissertation has no focus on the exploration of aesthetic representations. Nevertheless, its visual justification relies on the "Imitation" feature of the universal signatures of art. In the words of American philosopher of art Professor Denis Dutton, this feature corresponds to the representation of a "real and imaginary experience of the world" (Dutton, 2013, p. 274). A further justification on this choice is found in the genre's premise selected for this videogame, an RPG experience consists in the representation of a concrete role taken from a wider universe.

6.1.3. Environment

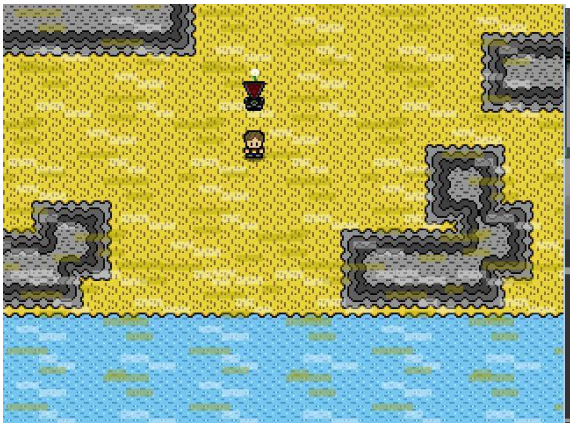
Several backgrounds are used in the game, there are four tilesets used in total. Firstly, the player is in the middle of a forest, most colours are variations of green, which provides a calmed environment at the beginning of the experience. Secondly, characters are sent to a similar area with a notorious lake. Then they are sent to a beach in which grey and yellow tones surround the area. Eventually, the player is teleported to a city in which grey tones are presented as a constant. Finally, students watch a desert environment full of yellows and oranges.

Each tileset contains the basic characteristics of the environment presented in a compacted manner they are distributed through the screen to represent the background. Each of the designed backgrounds are based on specific Chilean terrains: 1.- The first area known as “Grass” is based on different types of forests around the Centre and South of Chile (Picture 4); 2.- The second area called “Lake” is based on lakes from the south of Chile, specifically in the Cucao Lake in Chiloe (Picture 5); 3.- The third area is based on a beach from the Valparaiso Region (Picture 6); 4.- The fourth area is a city from the centre of Chile, it is implied that it is based on Santiago due to the type of lanterns and the structure of the buildings (Picture 7); 5.- The fifth area of the game is based on the Atacama Desert from the Second Chilean Region (Picture 8). Finally, the protagonists come back to the original Grass area; some modifications could be observed, especially the presence of fire in the surrounding areas.

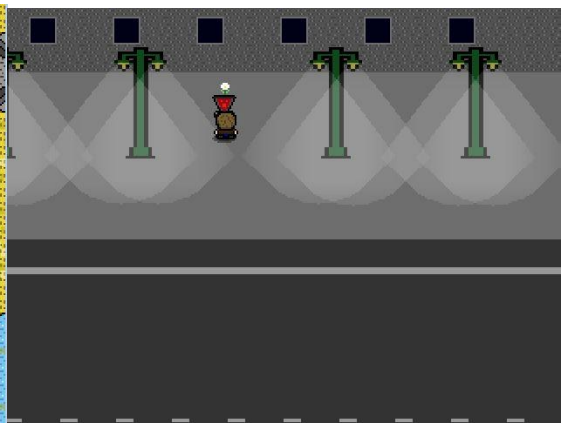
Picture 4.



Picture 5.



Picture 6.



Picture 7.

Picture 8.

6.1.4. Premise

Every videogame has a premise, whether it is a narrative or non-narrative experience. The premise consists of a single statement that summarises and introduces the main concept of a game. As it is stated in the introductory section on the official installation document, the premise of this videogame is: "A robot named E-Bot has a malfunction, which makes it travel from different places in Chile; Sam, a child who travels with the robot, has the objective of helping it along the journey"

6.1.5. Characters

During the story, students will see four characters. In the beginning, three of Sam's friends are walking through the forest, they are based in sprites of 16x16, which left most details up to the imagination of the player. One child enters deeper into the forest, encountering a robot called E-bot. E-bot is a grey robot with a green belt whose visor changes from blue to red when danger is nearby or incoming. Every character is coloured with pale tones, being distinguished from the environment by comparison. The robot is always placed in the same spot, as it is considered a constant in the solving process of problems.

6.1.6. Script

The script of dialogues and movement was designed focusing concretely on making it similar to the development of worksheets during the controlled activities of the instruction part of an English Lesson. Every room in the game could be stated as a multiple-choice question from the controlled activity of a worksheet. The dialogues from the script are mainly simple short and concrete messages, besides its descriptive nature, which allows students to comprehend the situations shown with no type of gap (See appendix E).

6.1.7. Mechanic

Students can interact with the robot pressing the Spacebar and explore areas to find different solutions for problems moving the character with the Arrow Keys. They have exploratory freedom in the environment. During dialogues, students have certain moments in which they could select the coherent answer among different options by clicking over them. Students can also find in every question the option to go back, so they could watch the situation again. When students select the correct option, the story progresses as it moves them to another place. After completing five levels, the game ends. Additionally, if the student needs help on the controls of the game, they could press and hold the key of the letter "H" to show a small instructive picture in the upside right corner.

6.1.8. Dynamic

Sam is the character controlled by the students. Sam can interact with different elements in each room. The objective of the game is to solve problems so they can visit every place. The robot serves as a reminder of the main objective of the activity. When the robot is flashing red lights, a problem must be solved. Every time a problem is solved, both Sam and E-bot are transported to a new place where a new problem is presented. When both characters head back to the initial place, the game shows the conclusion of the story.

6.1.9. Sequencing

Sequencing is generally defined as the order of actions a player must accomplish in order to complete the experience. According to Doctor Barry Ip, there are three key elements in the establishment of a sequence on a videogame: a) Story: "a sequence of events involving entities, [...] is bound by the laws of time [...] starting in the beginning, moving through the middle, and arriving at the end" (Ip, 2011, p. 106); b) Plot: the events that give shape to the story; c) Narrative: the representation of the events, i.e. "a retelling of the story" (Cohan & Shires, 1988, p. 1). Additionally, Doctor Barry emphasises the importance and significance of distribution of scenes through the previously mentioned concepts, specifically, he divides

every scene into three necessary instances: a primary non-playable introduction of the scene, a mid-part of consistent gameplay, and a non-playable closure in which players distinguish a transition between one scene and another (Ip, 2011, p. 107).

To sum up, the sequence on a videogame has to be divided into scenes considering three different aspects, while those scenes must have a structure of three concrete steps. Firstly, the Game Start is presented, which is the moment that introduces the context or event upon which the plot stands. Then, the Gameplay is developed, which is the instance that allows the player to control and interact in the events. Finally, the Ending can be found, which is the non-interactive part that explains the results of the Gameplay, or the resolution of the scene (Ip, 2011, p. 107).

In the case of The Adventures of Sam & E-bot, the videogame contains six main scenes. The first scene corresponds to the introduction of the game, it starts with a simple command given by a friend of the protagonist: Go to the forest; then, the student has the opportunity to test the movement controls of the protagonist. After going into the forest, Sam finds a robot with whom he can interact with by pressing the action button.

The following four scenes are designed with similar sequencing, the three-act structure is followed markedly. Firstly, every scene begins with an explanation of the broad situation. In some cases, the context is explained, while in some other cases the actions are detailed and the sensations the characters are experiencing. Secondly, students have to answer the main question of each situation, which corresponds to a natural phenomenon that must be identified to advance to the next scene. Thirdly, there is a certain feedback in the response given: if it is correct, an affirmative positive response is given; while if it is not accurate, a proper response is stated. The winning condition is determined by the accuracy of the student's response.

The last scene in the game, however, has a finale which states the final part of the narration. After introducing the correct input to the robot indicating that there is a wildfire, the student is asked to solve the phenomena by pressing the "Enter" button of the keyboard

to put off the fire. Once the fire is controlled, the last part of the scene is presented, which is also the ending of the videogame in which Sam and E-bot go to another adventure together.

6.1.9.1. **Rooms:** 7 in total, 10 activated during a regular walkthrough.

The program used to develop the software, in this case, GameMaker Studio 2.0, divides every instance or visual presentation in rooms. Every room is an interactive space that the screen shows, they follow a certain sequence and organise the elements, such as characters, background or objects, in an established position.

In the case of "The adventures of Sam & E-bot", the videogame has a total of 10 rooms, three of them are repeated throughout the story. There are three rooms used in the menus, the first one is a presentation screen in which the videogame is introduced; the second one is the general instructions, and the last one is the ending of the game which has the credits of the software. There are seven rooms used during the gameplay, there are two rooms from each "Grass" and "Lake" areas, and one for each "Desert", "City", and "Beach" areas.

6.1.9.2. Stages

The videogame has 5 stages distributed in 4 different areas. Each one of these stages has only one concrete, correct answer and two distracters/confirmations. Each stage could be translated into a controlled activity question in a worksheet.

6.2. Developing Process

The developing process of the videogame conducted in the platform GameMaker Studio 2.0 was performed by the organisation and presentation of different Builds. A Build is an executable file which serves as a content preview, a technical demonstration, or an experimental update of the final product (Bethke, 2003, p. 246). During the creation of this

game, the team generated 17 different Builds, which were identified by the serial version of each one. These Builds will be described from the earliest executable to the latter product.

6.2.1. Version 0.1.

Mechanics and Movement.

This is the earliest version of the videogame, it is entirely based on the basic mechanics of the game; focused on the movement of the objects and distribution of rooms and transitions. After the definition of the basic characteristics of the aimed game, there was a technical demo designed of every basic interaction inherent to the gameplay; as well as every possible type of transition.

6.2.2. Version 0.2.

After a full revision of the movement inherent to the gameplay, the developing team focused on the basic visuals of the game to be used in the designing of a coherent plot.

6.2.2.1. Version 0.2.1. Collisions, Menu and first models.

This Build consists of a content preview of the different aspects of the game, such as characters' sprites, background designs and main menu icons. Additionally, in this build, the different types of collision that could be experimented, such as activation of dialogue or selection of interactive buttons.

6.2.2.2. Version 0.2.2.

This is the first build with fully animated sprites. The sprites are the different pictures and frames that compound a character or object in the videogame. In addition, several combinations of colours were designed for every object, so that the most suitable colour pallette could be determined for the videogame specifications.

6.2.3. Version 0.3.

The addition and concrete considerations of Special Education Needs characterised this version. These were differentiated by the focus of each version: the first one is focused on the development of character models, the second one prioritised room development, and the last one aims to develop one specific situation.

6.2.3.1. Version 0.3.1. Full characters.

The sprites used in every character were chosen. The protagonist, for example, was composed by a gender-neutral sprite with a name that could correspond to both male or female, as well as a light brown skin which might relate to a broader audience in Latin America. From this build onwards, the focus of every design decision is built with the corresponding SEN consideration based on the former corresponding theoretical background.

6.2.3.2. Version 0.3.2. First Room (Introduction).

After the development of every character, the focus of the design in the videogame was the definition of the rooms in which the game takes place. The first room produced was the grass room, in which some trees surround a green grass area. The robot is centred in the area. Once the player interacts with the robot, the experience produces a generic dialogue stating that it is the end of the experience.

6.2.3.3. Version 0.3.3. First Executable with one problem (UTEM Revision).

In this version, the generic text was replaced by a concrete problem, this one being the problem of the flood, in which the whole area shows an aggressive amount of rain. When the player interacts with the robot, it shows the question “What is happening?” as well as three different options. The experience ends when the student clicks over the correct response, giving the input to the robot to show the ending text. This is the executable file shown in the first revision and feedback given by Designer Francisco Pino, from Universidad Técnico Metropolitana, whose first comments on the feedback of the game was its innovative and coherent design focused on education. We summarised suggestions in the following list:

- Correct the depths of each object in the game, some objects are in front of others.

●Correct the collisions of each area playable on the game.

●Add a certain notorious sign on the robot that shows students the importance of it, as well as a reminder of its corresponding usefulness in the game's completion.

6.2.4. Version 0.4.

This version aims to polish the specific details mentioned in the previous feedback, as well as adding the components of the main menu expanding the amount of situations/problems to solve in the game.

6.2.4.1. Version 0.4.1. Options displayed through the room.

At the beginning of the production of this version, every past feedback was corrected. The robot (now called E-bot) changes its colour from blue to red when any action is needed to move forward in the story. Every collision and depth was also checked. Additionally, in this version, the design of the definite screen grammar and position of the Heads Up Display (hereon HUD) was made, which is the position of in-game statistics, dialogues and menus. The main menu was also added in this build, having only two options: Start Game, and Exit Game.

6.2.4.2. Version 0.4.2. Backgrounds and options displayed.

Once the HUD, as well as the main menu, was checked and approved by the research team, the focus was on the design of the other backgrounds. The zone called “desert” consists on a colour swap from the original “grass” area, replacing every green element with a light brown palette. The city is composed by a variation of the same background elements of the ground with a gray filter, while the sand was composed with a yellow filter.

6.2.4.3. Version 0.4.3. Second Executable with every situation.

This executable build is the second software checked and analysed by the external assistant in design Professor Francisco Pino. This build contained every situation that is part of the game; however, all of them contained a completed with generic non-corrected

dialogues. The idea of this build is to show a full concept of game mechanics, as well as every background. The suggestions for future development were the following:

- More explicit hints on how to control and play the game.
- More explicit elements that denote the situations in which the player is asked to give a certain response.
- The analysis on the colour might be considered a part of the investigation, due to its innovation in the area and inclusive implications.
- More blind testing on relatives that might benefit the identification of gaps, incoherent elements or bugs, in the gameplay.

6.2.5. Version 0.5.

6.2.5.1. Version 0.5.1. Script addition and check.

The main correction and addition of this early build is the completion of the official script for the videogame. Thus, every situation or stage of the videogame has replaced its generic dialogue for a fully edited concrete and supported conversations. Additionally, some bugs that occurred in specific situations were corrected, such as instances in which the characters were unable to interact. Finally, the stage of the grass received a fully animated rain sequence, while the forest of the ending receives animations of the wildfire. Lastly, this version of the game corrects the walking animation of Sam and adds a glowing effect in E-bot that denotes its current state of interaction.

6.2.5.2. Version 0.5.2. Third Executable with Script, backgrounds and options.

In this version, every background of the game was completely designed according to the colour, space and texture needed to enhance SEN considerations. The complete script was also revised in which the instances of incoherence, typos or ambiguities were edited. This was the last build of the game which received external feedback from Professor Francisco Pino, who stated that this version was ready.

6.2.6. Version 0.6.

6.2.6.1. Version 0.6.1. Addition of final corrections and animations.

The game was checked completely, in order to search for certain bugs or ambiguities. The main menu was polished to present the information more effectively. Additionally, some informal feedback was taken from the experience of randomly selected players in order to search for possible simple or visual corrections.

6.2.6.2. Version 0.6.2. Final executable with corrected animations and graphics.

This build contains every correction found in the last process of feedback. Additionally, a physical non open to interpretation tornado was added in the beach's stage, a sudden shaking effect in the city's stage, and animated fire in the forest.

6.2.6.3. Version 0.6.3.

This is the version in which every aspect considered in the game was added in its more proficient form.

6.2.6.3.a. Version 0.6.3.a. Original final build with animations, graphics and originally selected fonts.

This is the version build with the original fonts in which it was programmed. Also, a picture in the main menu designed by Chilean Designer Belén Mancilla was included. She also designed the title graphics of the game.

6.2.6.3.b. Version 0.6.3.b. Final build with animations and graphics, font with focus on Dyslexia.

This edition of the game contains the same designs for the main menu, as well as the original title graphics. However, this version has a font specifically designed to improve the learning of students with dyslexia, and prevent them from making misconceptions on the understanding of words.

6.2.6.3.c. Version 0.6.3.c. Final build with no animation or graphic, originally selected fonts.

This version has the original fonts of the game, however, none of the graphics designed for this videogame are shown. This decision has a coherent foundation in the enhancement and improvement on the attention of ADHD students.

6.2.6.3.d. Version 0.6.3.d. Final build with no animation or graphics, font with focus on Dyslexia.

This version was built from a mixture of the consideration of the two previous versions. It has the specific font, as well as no graphic.

6.2.7. Version 1.0. Up to be released after this dissertation.

After the development and approval of this dissertation, the official 1.0 version of the game (or release version) will be published online.

6.3. SEN considerations

6.3.1. Colour

Colour has been deeply studied for centuries. The most famous and oldest experiment to date is the research conducted in 1666, by Sir Isaac Newton (Newton, 1671). He is notorious for having conducted the experiment in which he bended white light through a prism, concluding that all the colours existed in the light. In simple words, Newton supported this idea by explaining that as the white light went through the prism, different colours travelled at different speeds, therefore they were projected differently. Throughout this, and other related experiments, he proved that light was the responsible of colour and that the prism refracted it. The importance of this experiment lies on settling the first conceptualisation of colour which fascinated the science community, in the same manner, it

revolutionised several aspects of modern life by influencing the relation with the understanding of colour and the environment, for instance, from the food industry, the textile industry and technology, just to mention a few.

Although colour has been widely studied by science, the field which had also found answers regarding the topic has been Art and Psychology. Artist Johann Wolfgang Goethe is known for his work in the early 1800s (Wolfgang von Goethe, 1840), when he defied the idea of understanding colour from a mere scientific point of view. He investigated the psychological effects that colour had on humans. Through persistent research he came up with 'The Colour Theory', from which is possible to encounter his so called 'Goethe's Triangle' which are several representations of his ideas portrayed on equilaterals triangles, that held on each tip a primary colour; blue in the top, red and yellow from left to right in the bottom. He then made an association of colours and emotions by using two opposed criteria. He divided the triangle into two groups; on one hand there were concepts related to excitement and cheerfulness while on the other hand, there were words related to weakness and unsettling feelings.

By giving words to colours, the abstract idea of the concept portrayed is no longer so philosophical but rather presents the opportunity of making two different analysis mentioned by Goethe's theory. The first are the biological responses to the stimulus to which the subject is exposed, and the second would be a cultural response which permits the individual to consciously decide whether he/she agrees or not with the colour-concept that is being made (Goethe, 1840). The present research is focused on the first idea and (it will be further explained) the impact that colours of nature have on a psychological and biological point of view.

6.3.1.1 Colours and inclusion

As previously mentioned, Goethe was not only a scientist nor he tried to imitate Newton, he was rather an artist and a poet. It is reasonable to infer that artists have a special

sensitivity in terms of the response of the audience they intend to reach, which could be one foundation of Goethe's findings. From most recent literature, it is possible to find a contemporary blog dedicated to art that states the following: Colours can stimulate, excite, depress, tranquillise, increase appetite and create a feeling of warmth or coolness' (Cullum, 2013). According to this quote and considering Goethe's theory, colours are not just a physical consequence of the movement of particles, but rather they truly impact the human body in diverse manners or as the quote suggests, can create sensations and responses after receiving the exposure to a certain colour or groups of colours.

Picture 9, left. Picture 10, right.

Continuing with Goethe's theory principles and for the purpose of this research, it is possible to make two different associations with the images from above. In picture 9, it is possible to associate these colours to the sun, which is the prime source of light and heat for the planet. Colours from yellow to an intense red are then grouped as 'Warm colours' and convey emotions like happiness and comfort. Picture 10, on the contrary, stands for 'Cool [4]colours', which can be associated with a variety of feelings from calm to sadness (Goethe, 1840). This brief explanation is the introduction of the justification of the selection of the colour palette.

[4] Picture 9 and 10 created by this research group, idea retrieved from: http://petercullum.com/wp-content/uploads/2013/11/Color-Theory-Psychology.pdf

After understanding the bases of light and colour, and how they might function in groups is time to move forward with a brief quote from the article 'The Inclusive Classroom: The Effects of Color on Learning and Behavior', which stated that colour is a powerful instrument that provokes profound psychological as well as physiological reactions (Gaines *et al*., 2011), hence the importance of considering colour as a fundamental aspect regarding the aim of the videogame. As for ADD/ADHD, ASD and colour, the following quote states: Some students (such as those with Attention-Deficit/Hyperactivity Disorder and Autism Spectrum Disorders) may be more sensitive to colour in the learning environment due to heightened sensory responses and strong visual processing abilities (Freed & Parsons, 1998). In terms of perception, there is a notion that students with SEN respond differently or they might be more sensitive to the colour stimulus. Considering that the ASD spectrum is as wide as the variety of students themselves, when interacting with students with ASD it is necessary to avoid overstimulation which could be caused for the excessive use of brightness, an exaggerated quantity of colours in the palette or an odd composition which does not represent something known by the student and therefore, he or she could come across feelings of uncertainty, wonder or even fear. Hence the necessity of making the colour selection process carefully and consciously.

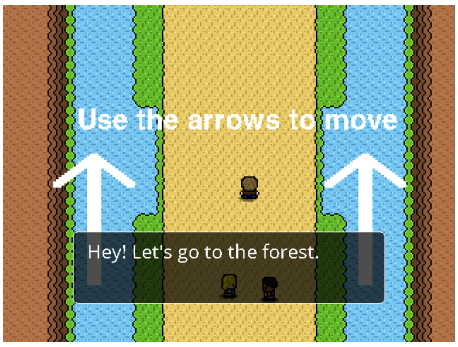
The criteria selected for the palettes are mainly the colours of nature and their influence and consequent benefits from a psychological point of view. An interesting consideration present in the videogame worth mentioning is how motion is perceived by students with ASD.

6.3.1.2 Colour Palettes

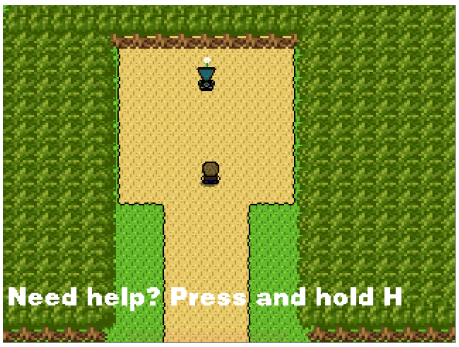
The colour palettes used thoroughly contextualise the videogame premise. Sam and E-bot are on an adventure travelling across different types of Chilean climates. This content is part of unit four of the national curriculum for 7th grade; thus, the colour selection recalls the premise of the videogame and nature, which will be explained with images taken directly from the videogame.

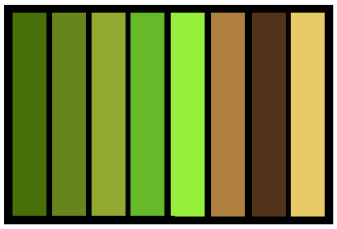
The colour palette is simple in terms of the quantity to which the student is exposed to. Consequently, the risk of forcing the player of the videogame to generate sensations of distress is lessened. This is an aspect to consider concerning students with ADD, by choosing simplicity over an extended selection of colours. Distraction is an element to keep restrained, to deviate the focus towards the benefits of the attention got from using the strategy of a videogame with a pedagogical purpose. Similarly, the videogame attempts to meet the needs of students with ASD who require an environment they can easily relate to, for instance: the beach or the forest. This is the principal foundation to select and adapt this material to the unit chosen in terms of content.

The following images correspond to the scenarios of the videogame where Sam, the main character, has the adventure. In the images it is possible to see that the predominant areas of colour are nature related: greens and browns.

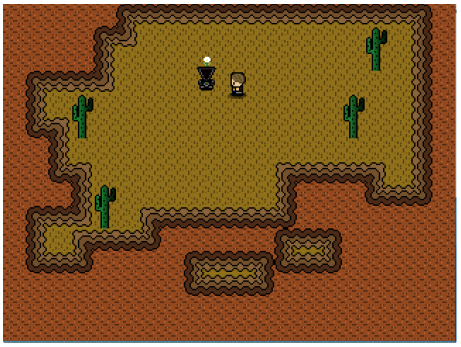


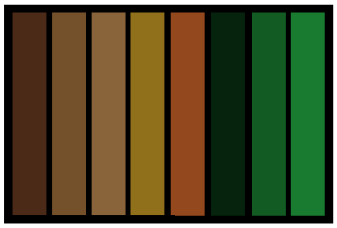
Picture 11, scenario 1.





Picture 12, scenario 2.





Picture 13, scenario 6.

As previously mentioned, scenarios 1, 2 and 6 include research related to considerations concerning the benefits of natural environment and the influence on human health and well-being (Silva *et al.*, 2014). Using these colours in combination, they are associated instantly by the brain to be outdoors, in direct contact with trees, grass, leaves, etc. The sensations of breathing a cleaner air purified by trees, being able to feel the wind through the skin, or to walk inside the forest, generates a sensation of a general contentment which may come from remembering experiences and recalling memories of the sensations mentioned.

When referring to treatments, physical or biological, there is a notion of health as the absence of a disease. But the term 'restorative' is an investigative line of research which discusses how the impact of modern life has major consequences in a person's life without the explicit presence of a diagnosed illness. Stress is then understood as a response to an excess of stimulus to which the subject is demanded to fulfil by today's life (Azevedo, R. et

al., 2018). This element is important to consider when selecting the colour palette. From a related article, it is possible to extract the following quote:

> Two main theories describe the restorative effects of exposure to natural environments: stress reduction theory, focused on improved emotional and physiological responses to life stressors, and attention restoration theory, centered on refocused attention and improved cognition resulting from contact with nature.
>
> (Azevedo, R. et. al. 2018 p.3).

Focusing mainly on the second theory, the 'Attention Restoration theory' states that when somebody is exposed to environments which are understood as 'restorative', like places of the subjects predilection or nature itself, there is a biological reaction of wellbeing and improved predisposition. In turn, this is then converted into an enhancement in cognition behaviour after the exposition to nature is finished. While the relationship of this theory with the purpose of the present is encountered on recovering the attention of the subject/student, and to redirect it into the learning process, specially for students with ADD and ADHD. According to Azevedo et al., natural environment has some 'restorative power' which enables the subject, or in this case, the student to recover and to centre the attention in the task they will have to perform.

Another aspect to consider from a biological point of view is related to the unconscious:

> People may be biologically prepared to quickly acquire and retain a liking for environmental features that would have been significant for the survival of our early ancestors. These include water, uniform grassy ground cover, and the forms and distribution of trees characteristic of savannah landscapes a setting of human evolution
>
> (Hartig, T, 2004, p. 276).

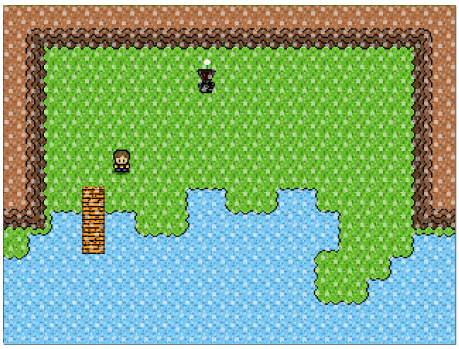
The author acknowledges that the possibility of having an inherent connection to nature due to the history of humans on Earth would be 'restorative', and it could make any particular

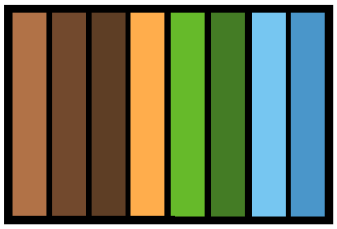
subject feel as if he or she were at home, and in conclusion, provide a sensation of general calm.

6.3.2. Motion processing and ASD

Throughout this research there has been a clear understanding of students with ASD; it has been said that they need explicit and consistent instructions, that the colour selected, and amount of external stimulus should be restrained to avoid feelings of distress, anxiety or feeling overwhelmed. However, when it comes to the perception of motion and the use of this feature as a part of the design of the videogame, it is interesting to examine how motion processing occurs in students with ASD. To do so and using the existent research, the first conceptualisation is made: 'Motion processing is an important aspect of visual development as it enables children to track moving objects with their eyes, direct reaches and grasps towards moving objects and navigate within a dynamic world.' (Manning, C. 2014 p. 29). Considering the displacement of the main character through the game and the previous quote, dynamicity is one aspect in games and videogame which shares common aspects with the purpose of this research. To walk represented with an avatar which in this case is called 'Sam', inside the videogame would also have the intention of focusing on the processing of dynamic information (Manning, 2014).

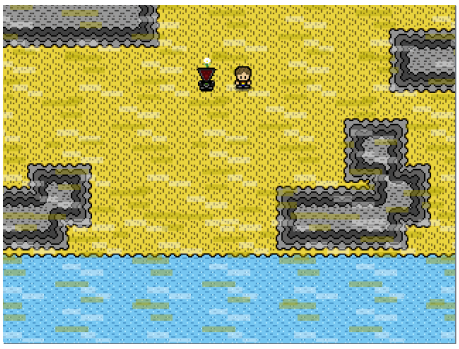
According to Manning (2014), motion is also important to understand the direction towards the objects is intended to reach and the speed of doing it. To better explain this last idea, on the following image in scenario number 3 the first part of this stage and as the first vocabulary item to teach, when Sam gets near the bridge, rain pours down the screen. The rain falls from the top of the image in a constant direction to the bottom as a way of portraying and providing the context to the question that goes along: What is happening?. In this implicit manner of using motion in the 'rain' factor to present the command that the student will have to answer, the necessity of providing a simple yet concise input is being completed.

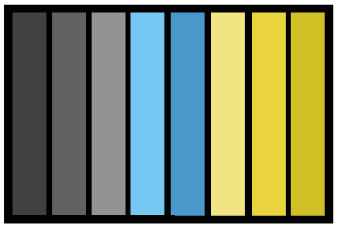




Picture 14, scenario 3.

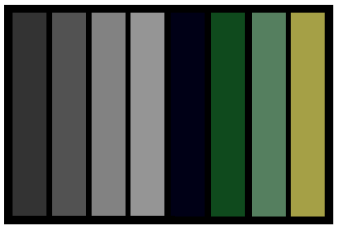
Continuing with the same idea of the importance of the direction of motion, on scenario number four (4) the correct answer is ‘Tornado’, and it is possible to relate the answer by the movement of the ‘wind’ which is not vertically now, but instead moves from right to left.





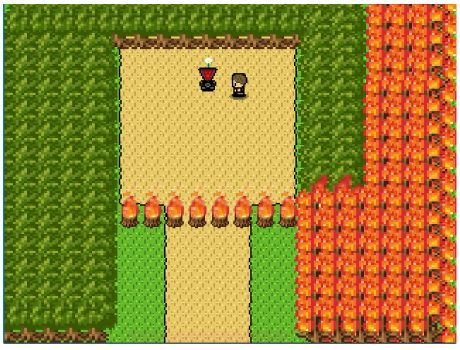
Picture 15, scenario 4.

On the following image, the scenario represents an earthquake. Like the previous stages, in this scenario, the script of the videogame contains phrases to help decode the message. The direction of the movement is not linear, but instead, it moves fast and without an obvious course simulating a real event. By doing this differentiation and also varying in the direction, it will also function to reinforce and guide the answer of the students.



Picture 16, scenario 5.

The final image to examine is also the final scenario of the game, which holds the particularity of movement in a part of the stage as a difference from the rest of the images above. This scenario represents the forest being consumed by a wildfire. The fire begins on the right side of the game and then continues until blocking the path of the characters. The movement of the fire is attached to the logs of the trees and Sam says that he needs help to put it out.



Picture 17, final scenario (7).

Motion in students with ASD according to author Manning senses motion atypically, as opposed to the case of 'typically developing' children (Manning, 2014). In her research, she analysed in-depth these aspects from a neurobiological point of view, and part of her conclusions included that there were differences in these two categories in terms of the constitution of the brain and therefore it's functioning. She proved that after being exposed to the same input both TD and children with ASD, some of the last presented better results.

Therefore, to provide the videogame with motion would be a manner of attending another ability of students with ASD.

6.3.3. Font

First of all, it is important to state that dyscalculia, dyslexia or any other speech disorder are not our research objective. Nevertheless, the purpose of this investigation is to have SEN considerations to cover a larger variety of the student's necessities, hence the selection of a specific font for the videogame.

It is worth mentioning that, although there are several studies regarding the reasons of each different type of SEN concerning the use of a font for educational purposes, still there is no clear explanation for the origin of the diagnosis. Considering this matter, it is possible to infer that, as well as the treatment, the range of improvements that can be made by using a specific type of font would be of tremendous help for students with dyslexia.

One characteristic of the font called 'Open-Dyslexic Font' created by the designer Abelardo Gonzalez (2014), is to place the gravity centre of the letter in the bottom and by doing so, students would avoid switching the letter upside down, because the base would be clearly defined. The other important characteristic of the font selected is that has individually shaped each letter, this might seem as a subtle feature for some, when in fact it has a real impact on students with this type of speech disorder.

This is the essence of this font type, to make the letters as distinguishable as possible by making slight changes. For instance, some characters have longer sticks endings like 'f', 'p' or 'h' and finally better spacing between each letter which helps in the reading process.

6.3.4. Instructions

Clear instruction is as fundamental as preparing the lesson, it is one of, if not the most important part when delivering the guidelines for the student's production after the contents

were taught. Hence, a thorough explanation of the activity is the best option in the classroom, nevertheless, the instruction has to be modified to a simpler and shorter version when students with SEN are present. Instead of a very detailed explanation, it is better to be as simple and explicit as possible. Regarding the two different types of SEN selected in this research, the students share more similarities than differences when it comes to receiving instructions. On one hand, students with ASD must have explicit commands in which there is no room for inferences or subtleties. It is necessary to bear in mind that every student with ASD is unique in its own condition and degree of disorder, which in concrete terms, affects different areas like communicative, sensorial or social, among others. They perceive differently and experience the world in their terms, therefore it is important to pay close attention to the student's specific needs and be patient to improve the message and its understanding.

As for children with ADD and ADHD, regarding this topic, the issue lies in the amount of interest the student may have on the topic. It demands even more of an effort for the student if besides the inattentiveness; they are also moving constantly, shaking a leg or when they may be humming. Students with ADD or ADHD may often daydream, so the key factor is to catch the student's attention by trying to engage him/her somehow. It is not the duty of a teacher to entertain his/her students, but when it comes to engaging them, there are different resources to be used. For example, these students might have problems prioritising their homework: what to do first and last, therefore if you give them a long-term project which includes several steps, they might need assistance to manage the times of stated assignment. Therefore, it might be better to consider more and smaller tasks, but with more monitoring. Another characteristic is that these students act and react quickly, so it is vital to set the classroom atmosphere calmly and consistently where not only the rules are predictable but also the expectations.

Students with ADD and ADHD can dedicate long periods to performing on their areas of interest: they can be seated in front of a computer for hours doing something they enjoy, therefore and considering the theory related, it is more than reasonable to state that a video game proposal will be pertinent to respond to the students' needs and to catch the student's attention.

6.4. SEN and Videogames

SEN and videogames have come together as topics of relevance in the past. Both videogames and SEN share several grounds in common which reinforce the idea of using a videogame as a pedagogical strategy. It is also possible to find another meeting point understood as motivation, as is stated by Legault et al. (2006), who state that "one of the most prominent academic problems plaguing today's teenage youth is a lack of motivation toward academic activities" (p. 567). Hence, the intention of using a videogame, which was also stated by Saridaki (as cited in Stankova et al., 2018, p. 489) enhances concentration and consequently motivation for the task given.

First, to hint at the relation between videogames and students with SEN, the notion Walsh (2018) has regarding the educational field is taken into account: "The ultimate goal of many schools is to create a classroom that has the least restrictive environment to meet the needs of all students, including those with special needs" (Walsh, 2018, p.7). The idea of a non-restrictive environment within classrooms matches perfectly with the idea of using videogames since as Stankova et al. (2018) states, videogames provide an atmosphere of relaxation which conveys that sensation of flexibility.

In this section, the article 'Ten ingredients of great games' by Reeves and Read (2010) is used with the purpose of connecting with the SEN types selected and the most common characteristic of a successful videogame according to the authors.

First of all, Reeves and Read (2010) begin by defining what they call 'Self-Representation with Avatars'. They say that "The central feature on the screen is an avatar, and those belonging to other players, friend and foe" (p. 1). In essence, it is of common knowledge for any person who has ever played videogames; the visual representation and understanding of one's self on the screen; that the character is actually performing an action as a response to one's activity with the game using the media available, whether it be by using the joystick control, or the computer keyboard WASD. According to Reeves and Read

(2010), this changed the psychology of using technology because it allowed the user to feel 'inside' the game. Being able to talk, walk or virtually interact with the game and its characters, and even with other players as with online games.

The experience of being reflected on the screen and interacting with the setting and characters within the game that the avatar conveys is relatable to the imitation impairment commonly present in people with ASD (Ingersoll, 2008). Ingersoll also says that imitation has a very important social role; it allows the exchange of feelings and thoughts with others, which is the function avatars fulfil in video games.

When approaching ADD and ADHD, researcher and PhD Rosa Angela Fabio (2019) says that the use of avatars is beneficial for students with the SEN conditions this research group is targeting. Compared to the absence of avatars in a task, results regarding concentration and learning are far better when the avatar is present.

Furthermore, Reeves and Read (2010) state that three-dimensional environments are a complement for avatars which makes the game more appealing for the players; they put the avatar on an alternate fantasy world that keeps traces of reality that resemble the real world. Reeves and Read (2010) say that this allows understanding said fantasy world similarly as to how the user understands reality. Such a phenomenon is given by the use of three-dimensional graphics designed on a two-dimensional atmosphere which gives depth to the character's movements and interactions. As for SEN considerations to this feature, there are no drawbacks in realising an avatar on a 3D environment. In fact, regarding students with SEN, Zakari et al. (2014) listed in their research several 3D serious games that are made for ASD children, sustaining the idea that avatars are socially beneficial for a person with ASD.

Continuing, feedback is a fundamental concept in the educational field, but also when referring to the use of a video game and virtual worlds. It is expected from a teacher to correct an error or to notice the student's mistakes to prevent their repetition, and by doing so, the learning process occurs. Nonetheless, as stated in the case study conducted by authors Kay

and Tee (2019), ASD students have problems engaging in the questioning and feedback dialogue. It is here where the perks of using a video game shine the most; just as the use of avatars improves concentration for instructions, as stated by Fabio et al. (2019), who concluded that the same effect is possible at the feedback stage. As for ADD and ADHD students, the Children's Attention Project (herein CAP) from the Murdoch Children's Research Institute at The Royal Children's Hospital in Australia (n. d.), state that, as well as it is done in videogames, corrective feedback must be given immediately after spotting a mistake.

The last selected item is 'time pressure'. According to Reeves and Read (2010), most of the players play to win; this can be achieved by motivating the player's interest using two different uncertainties: one is related to knowing the game, which means understand it and complete it whereas the second is related to fulfil the games commands by using the tools of the game and the given time wisely. If the game is under a competition context or is successfully appealing to the audience's attention; an atmosphere of competition is expected to occur due to the different results of different players, which can be measured both in time and score. As for children with ADD or ADHD, attention is one of its main restrains in terms of a time-consuming task. Time pressure is a factor that engages the student's focus. Nevertheless, for students with ASD, resources such as time pressure are not recommended; as indicated by Miller and Loos (n. d.), putting students with ASD under stressful situations may result into what is known as 'Shutdown', they also said that these events occur most likely when a person with ASD is exposed to social stress. Therefore, such episodes might become more frequent. For this reason, although this is a controlled activity, this research group has decided not to include restrictions in terms of the timing, even though it is suggested to start the class, the adaptation and consequently results will vary depending on the class and context.

There is a wide variety of literature that sustains videogames and SEN considerations in combination can be used with pedagogical purposes. Nevertheless, teachers together with the administration of the school must be careful when using any videogame within a mainstream classroom. There are traits in videogames that might result stressful for some

students with and without a SEN type, and for those students that have not been examined and therefore diagnosed. Another aspect important to consider is the intention of the use of the videogame, maybe the pedagogical purpose is not as clear as the one presented by this research group. In conclusion, it is for these mentioned reasons that videogames used in schools must be a new area to develop, and by doing so the experience would increase the perfection over time by using this technological strategy, and the orientation should as inclusive as possible to be appropriate for attending to the diversity of the students present in the classroom.

6.5. Suggestions for teachers when working with the Videogame: "The adventures of Sam & E-bot"

One objective of this research group was to compile the suggestions and recommendations that arose from the literature review and implementing the videogame in the intervention. Below, we summarise these suggestions written to help Chilean EFL teachers to teach the English language to 7th-grade students including students with SEN. However, the suggestions may very well apply to all EFL teachers anywhere.

6.5.1. Before preparing the activity

First of all, provide a clear, short and explicit explanation of the videogame, explaining the aim of the game and mentioning the objective of the class, which is to reinforce vocabulary. The most adequate manner of delivering the instruction should consider extra preparation for students with ASD for them to perform a new activity and preventing a great deal of distress for them or everybody else in the classroom. Second of all, write the commands on the board, to use the arrows or WASD to move, spacebar to interact and ENTER to continue. Third of all, be precise when establishing the time for the activity. Remind the students that it is not a competition, although it is natural if they do so anyway. The focus must be centered on learning. There must be awareness on promoting curiosity and participation instead of competition.

Then, it is also important to consider the position in which your students with SEN are seated. If possible rearrange the students in a manner so that students with ADD and ADHD do not distract the work of their peers. This process should be subtle and random so that there is no clear distinction between students. Another suggestion is to seat students with ASD near other students who are less likely to respond to negative behaviour. Children with this type of SEN are already making a big effort learning and applying social rules, therefore a supportive environment is crucial for lowering the levels of anxiety (Stowe, C. 2006).

6.5.2. When working with the Videogame: " The adventures of Sam & E-bot"

The teacher becomes an observer and a guide during the process. One of the focus must be on promoting social skills at the same time the classroom is calm; avoid over-excitement. When playing the videogame, it is important to reinforce vocabulary related to the content as much as possible. Working in pairs or teamwork is recommended. Students with ASD might need extra praise when appropriate social behaviour is achieved for instance, if a student shows an interest in taking part in the activity with a classmate, or if they decide how to act by reaching a consensus.

A more effective praising method for children with ASD would be to do so using simple and concrete sentences. Following the same idea from above, an example phrase could be ''You did that very well'' (Stowe, C. 2006).

If possible, play quiet & relaxing music, like classical music to create a calm atmosphere and lower the levels of anxiety. The sound level should be low so that it won't distract students with ADD/ADHD.

At times, the teacher should make himself/herself noticeable to students who may be inattentive or lose their interest. Getting closer to them and making gestures such as touching your lips as a symbol of 'look at me and listen to what I'm saying'.

6.5.3. Once the activity is completed

Paying attention is tiring for some students because it demands a bigger effort; therefore, after the completion of the activity, and once feedback is provided, a break is necessary for students with ADD and ADHD. Closer attention must be paid to students with ADHD as they can become more active when tired. If so, they might need a short break away from the group. An activity like reading or something within their interest range might help. Sitting next to the students could help to calm them down.

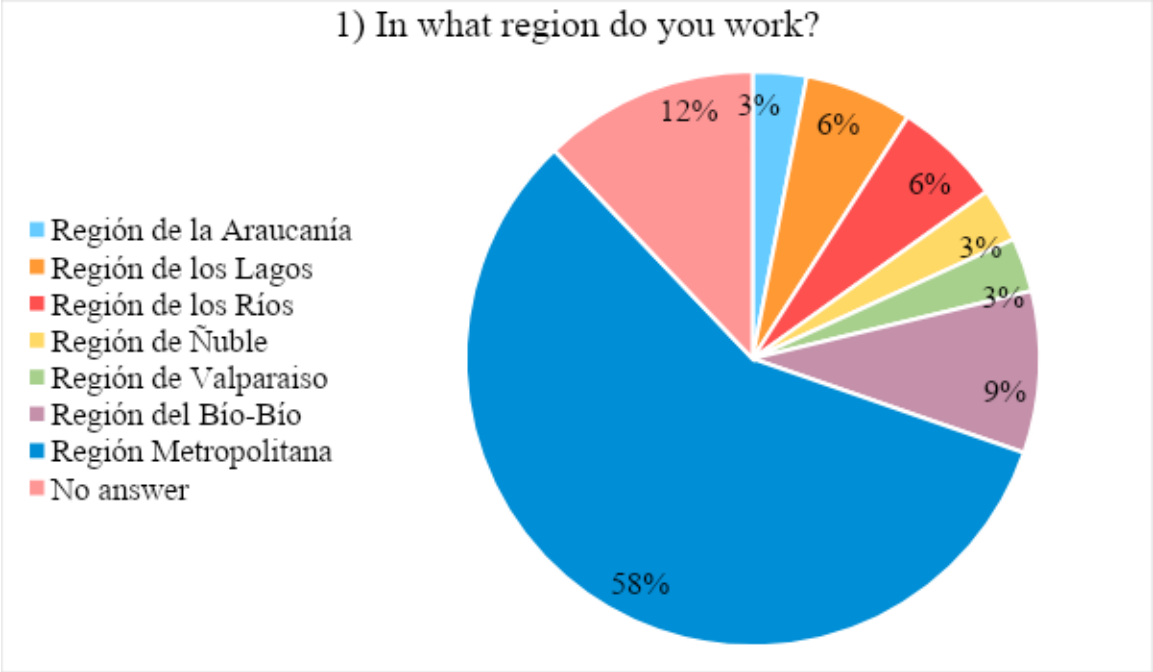
Some students with SEN, like other students, might want to please the person in charge or catch the teacher's attention. It might be good to provide opportunities for students to move around the classroom by helping the teacher erase the board or returning a book to the library, among other activities (Stowe, 2006).

Chapter 7: Data Analysis

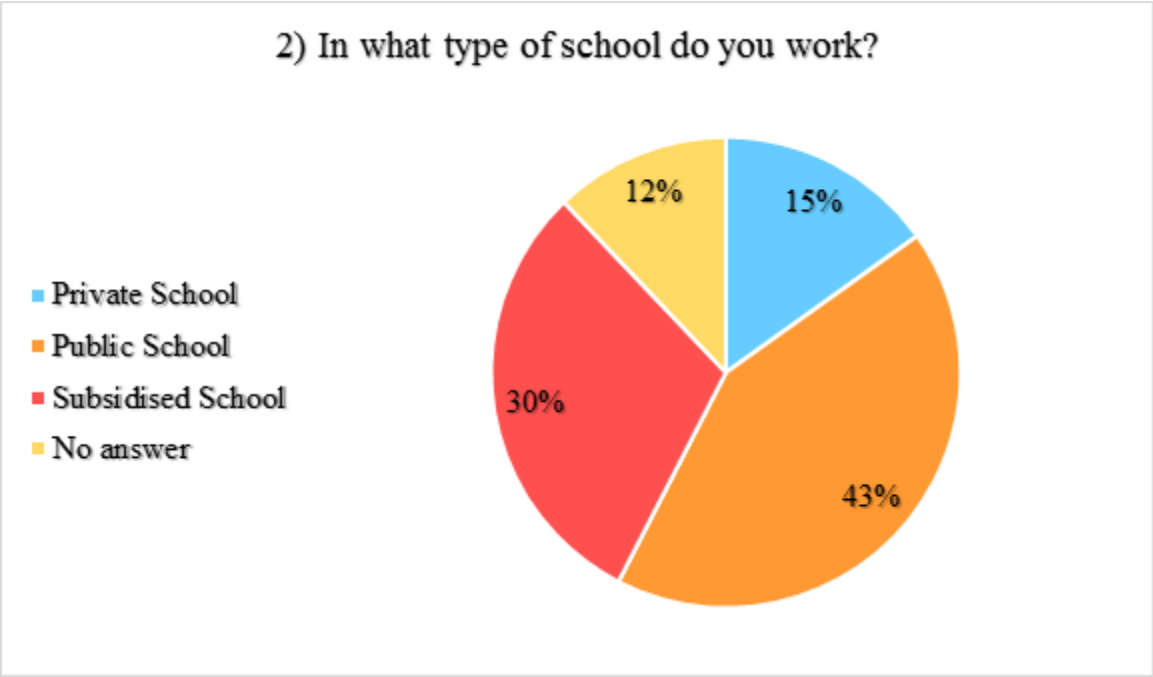
7.0. Description of Graphs

7.1. Section 1: General information of the participants.

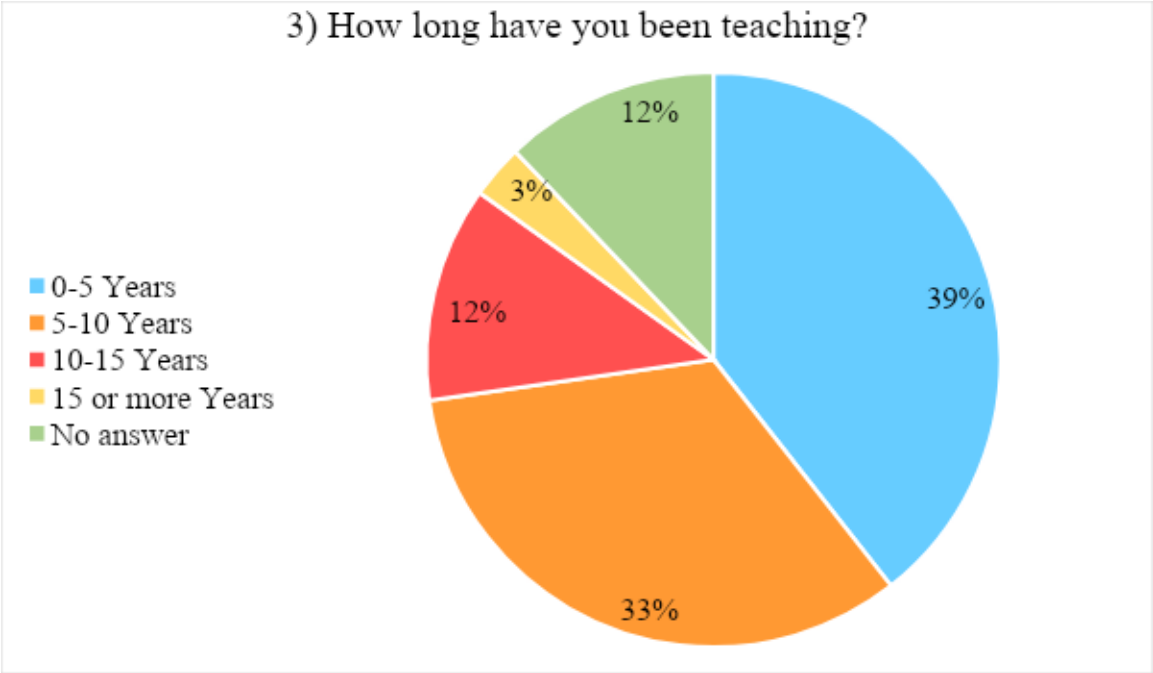
The following graphs describe the main profile of the participants of our survey. We asked the participants to name the Chilean region where they work, the type of school where they are currently employed, and the amount of years they have been teaching. Because of the purposes of our research, other factors such as gender or age were not taken into consideration.



The first graph of this section shows that 58% of the participants, i.e. the majority, work in the Metropolitan Region.



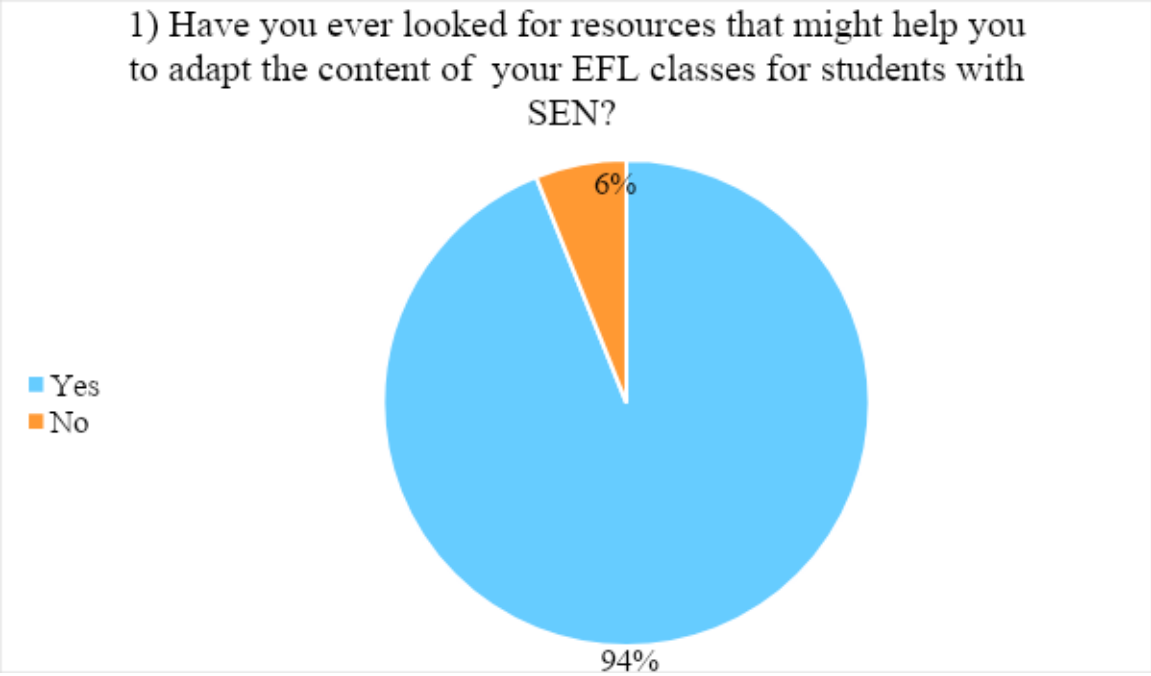
In the second chart, we can observe that 42% of the participants work in public schools. However, the percentage of participants working in subsidised school needs to be taken into consideration because it is 12 points below the majority, considering it the second majority of the scale. Finally, just 12% of the participants work in private schools. That is to say, that 72% of the participants work in public and semi-public schools.



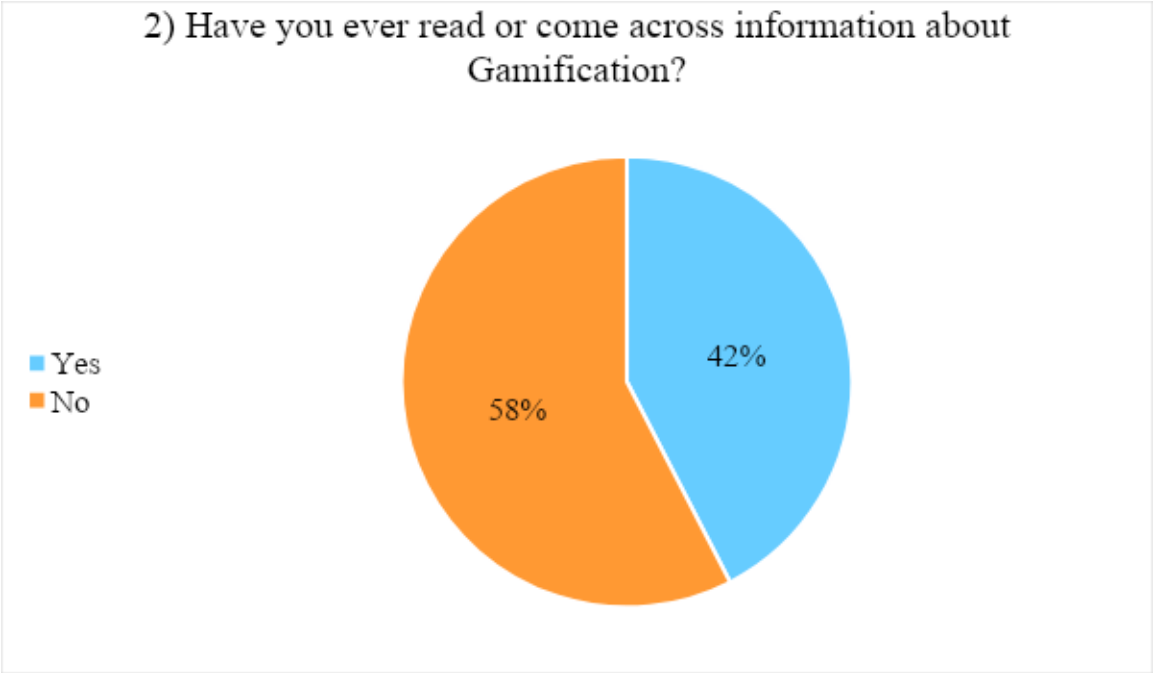
In the third question of our survey, we focused on the participants' years of teaching experience. 73% of the participants have less than 10 years of experience. That means that most of the participants can be measured from "Initial" to "Expert 1" according to "Carrera Docente" based on their years of teaching expertise (Mineduc, 2019).

Section 2: Closed Questions

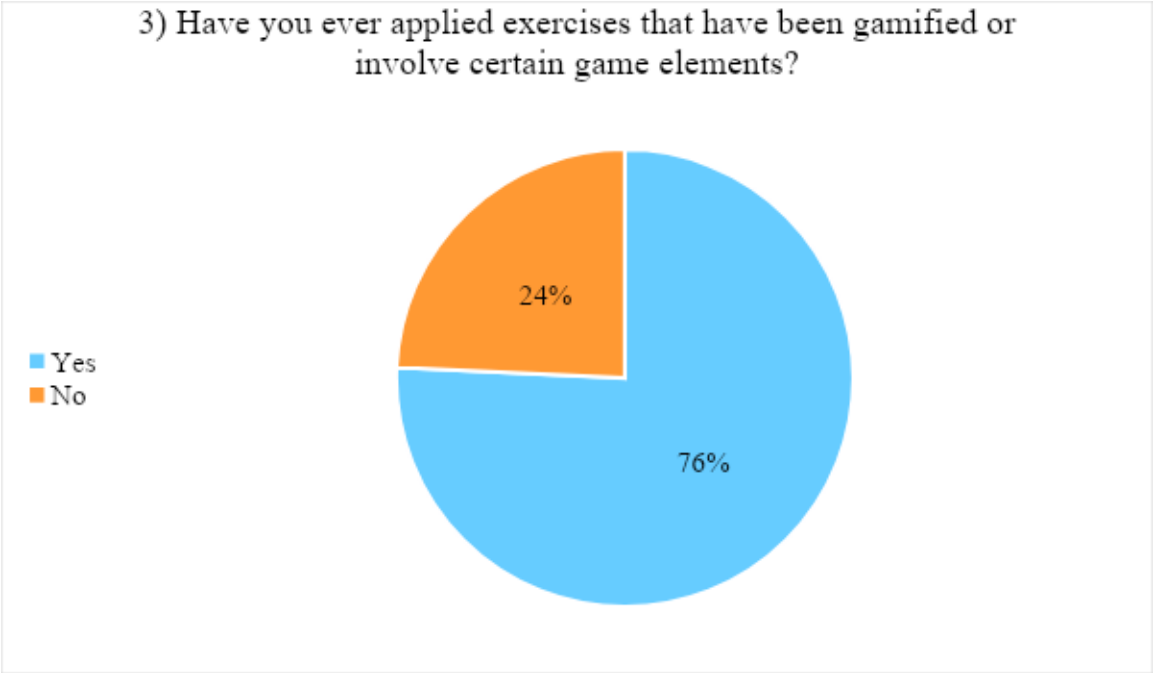
The following graphs describe the answers obtained by the participants regarding the different perceptions teachers have related to Gamification and the uses of inclusive videogames in EFL classrooms, based on their years of expertise.



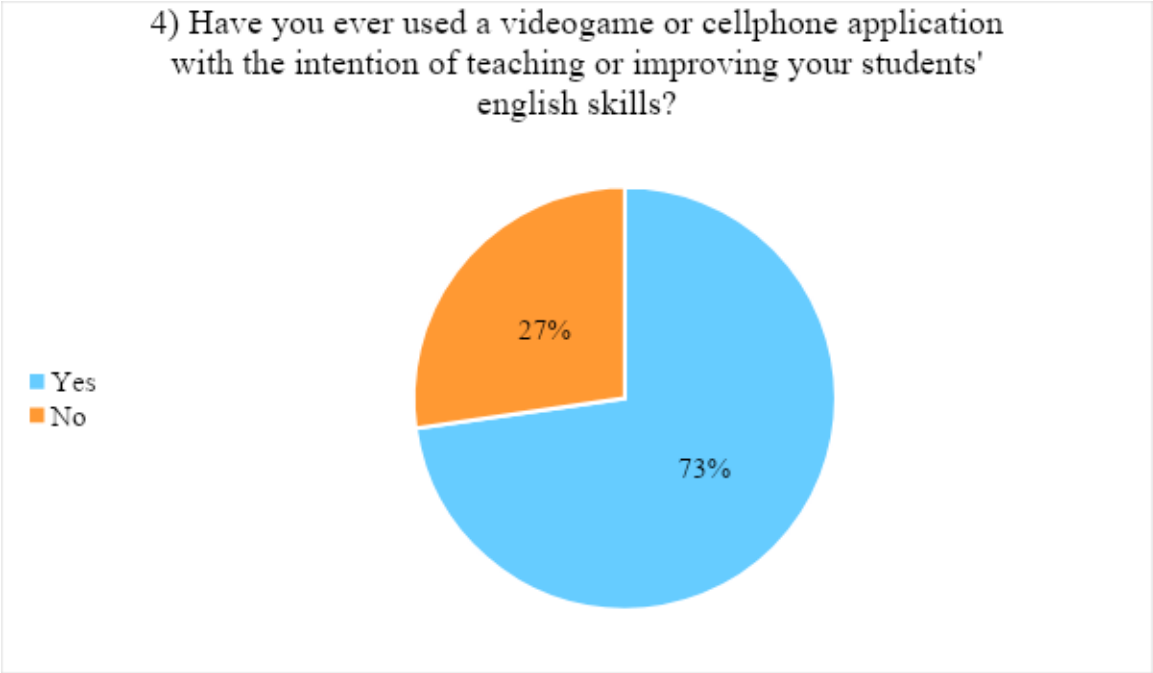
Question N°1 refers to the use of the material concerning the development of the contents and the adaptation of them in EFL classes for students with SENs. Based on the results, 94% of the participants have looked up for useful resources to adapt the contents developed in their classes to meet the needs of students with SENs. Moreover, there is only 6% of the participants who have not looked up for useful resources to adapt their lessons for their students with SENs.



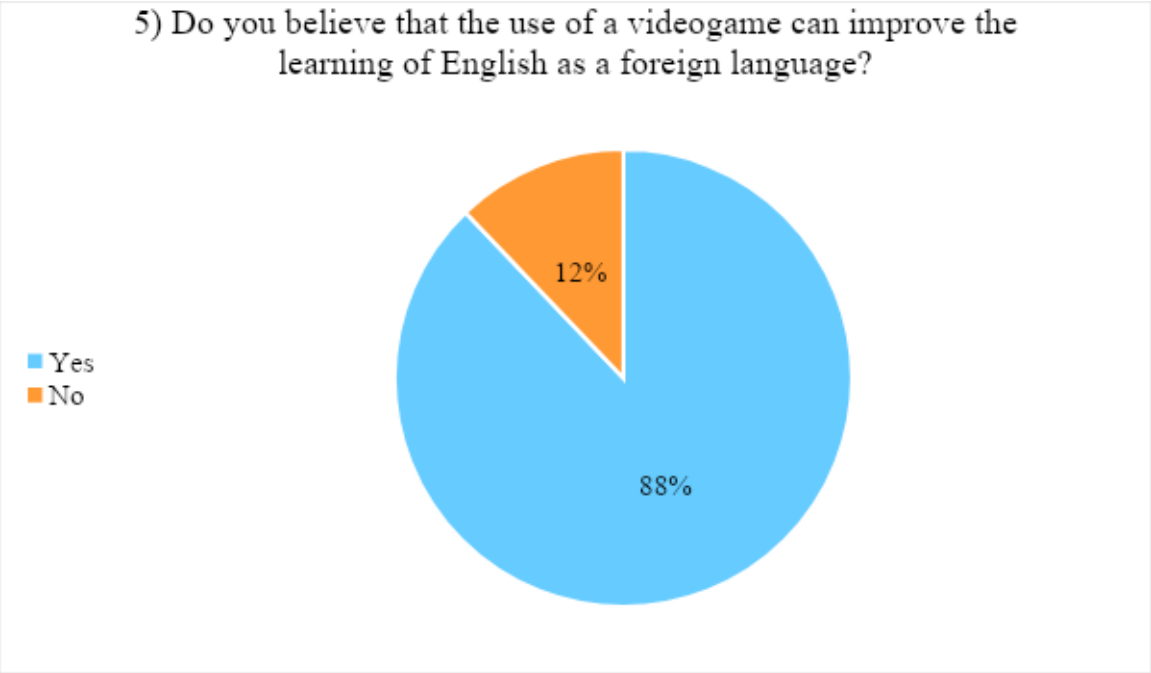
Question N°2 is related to the connection that the teachers have ever had with the information about Gamification. The results show that there are 16 points of difference between the participants who have and those who have not read or come across with information about Gamification. Taking into account that there are only two options “yes” and “no”, the difference is not significant. The results show that at least half of the participants know about Gamification.



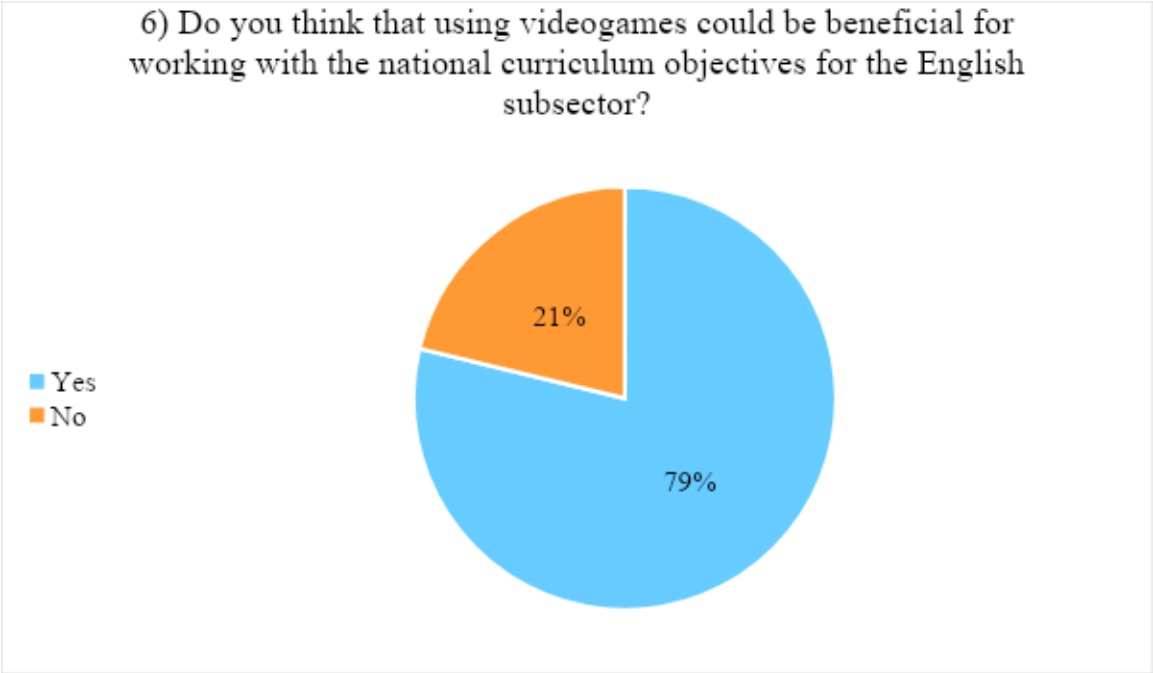
Question N°3 is directly related to the teaching method of the participants by asking them if they have ever used any gamified exercise or element in their lessons. The vast majority declares that they have applied some of these items, but as shown in the graph, 24% of the participants have applied none of them to their classes. The participants who have not applied gamified elements in their lessons are also part of the 58% group who is not familiarised with gamification see in the previous graph.



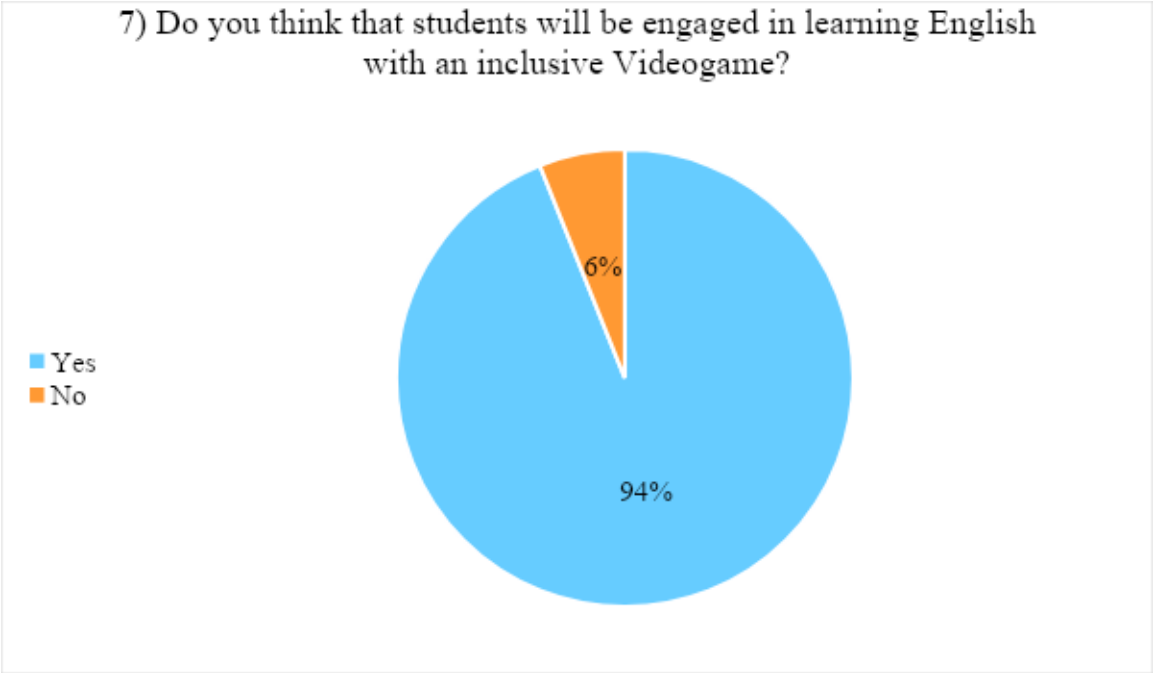
Question N°4 refers to the use of ICTs in the classroom where results show that 73% of the participants have used at least once an ICT in the classroom. The other 27% have either never used and ICT or they do not know what an ICT is. The results also de exhibit that most participants have used ICTs. Following the same path, in comparison with the previous results (questions 2 and 3), teachers consider videogames as educational tools to enhance language acquisition in their students just as power-point presentations do too, which are also considered ICTs.



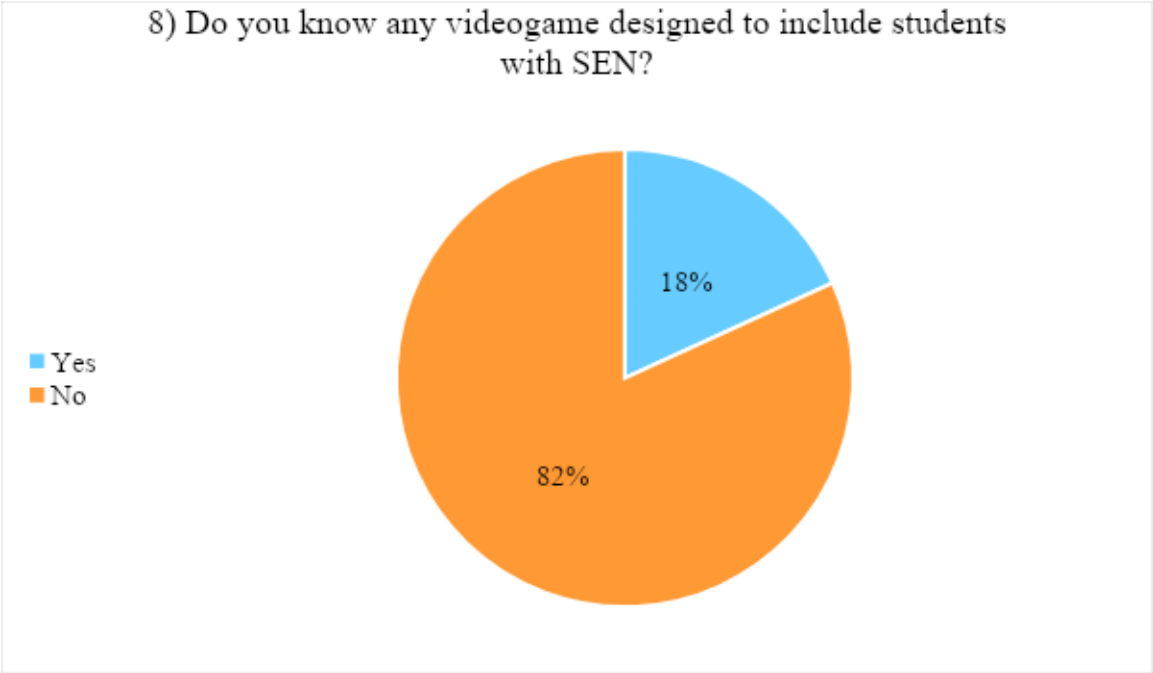
Question N°5 is an opinion question regarding how Chilean EFL teachers feel about using videogames in a class. It is possible to see that the vast majority of the teachers who took part believe that implementing videogames in class is beneficial for students, which represents an 88%, and the rest of the teachers who do not feel similarly represent a 12%.



Question N°6 takes into consideration the possible benefits of using videogames in EFL classes within the national curricula. A vast majority of the participants, represented by 79%, declare that using them could be beneficial to work with their students. On the other hand, 21% of the participants believe otherwise. Again, this can be due to either the lack of knowledge towards ICTs or being unfamiliar with the benefits of videogames. Another issue to bear in mind is the age factor. According to researcher Silvia Ferrero, older teachers are not keen into updating themselves and younger teachers are keen into new research and updating themselves (Ferrero, n. d.). Thus, it is possible to deduce that age is an important factor when analysing this question. However, we did not consider it in our survey.



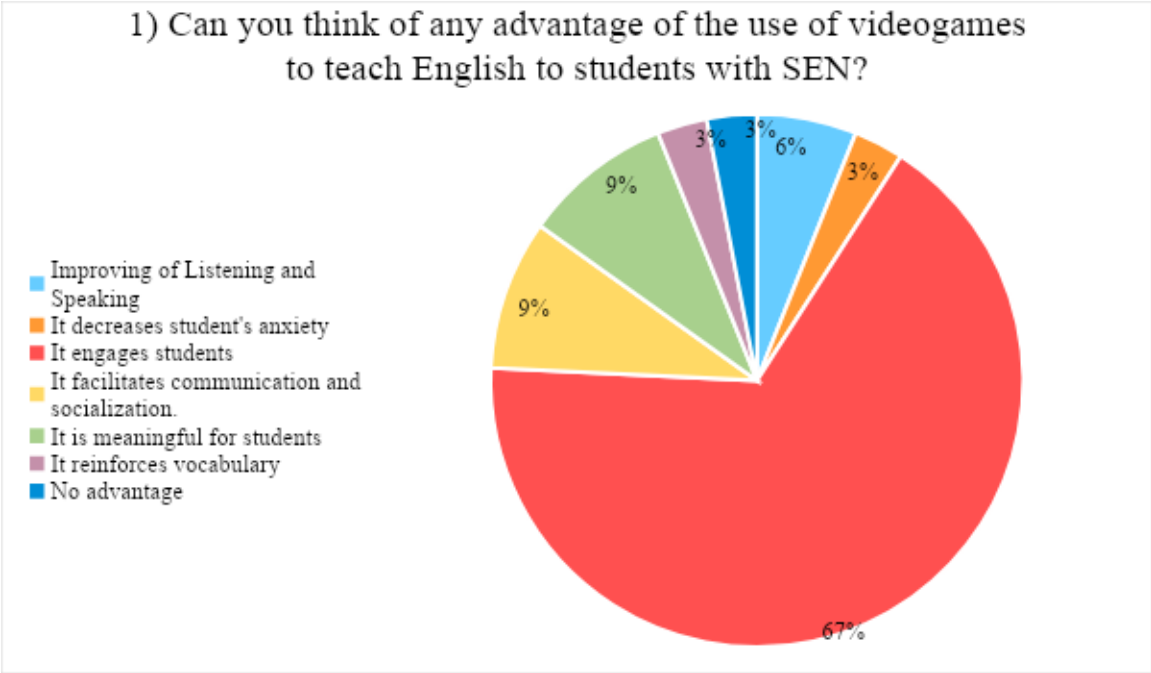
Question N°7 refers to the very essence of what would happen, according to the participants, with students using an inclusive videogame as part of the EFL class. The results conclude that 94% of the participants believe that students would be engaged, again taking into consideration that the project points out to seventh graders with or without SEN considerations. On the other hand, there is a low percentage of the participants who believe that having an inclusive videogame in the EFL class would not be engaging for students.



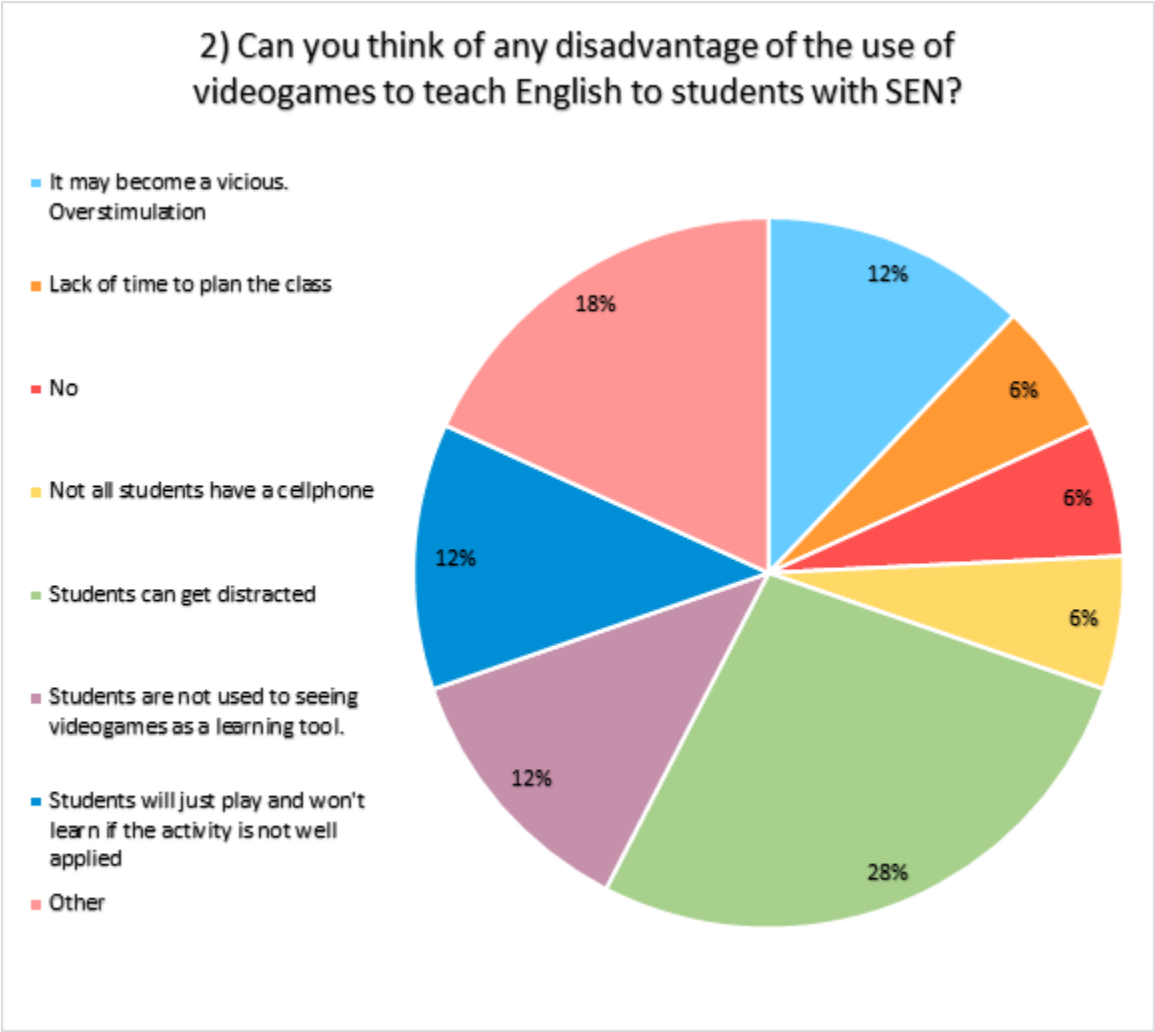
Question N°8 is related to the previous knowledge teachers had regarding the use of videogames with SEN considerations. In this particular question, it is possible to note that 18% of the participants were acquainted or have already used videogames with such characteristics in their classroom, whereas the other 82% has not. As stated before, this could be because few teachers are acquainted with ICTs or it might be because of age factors.

Section 3: Open questions

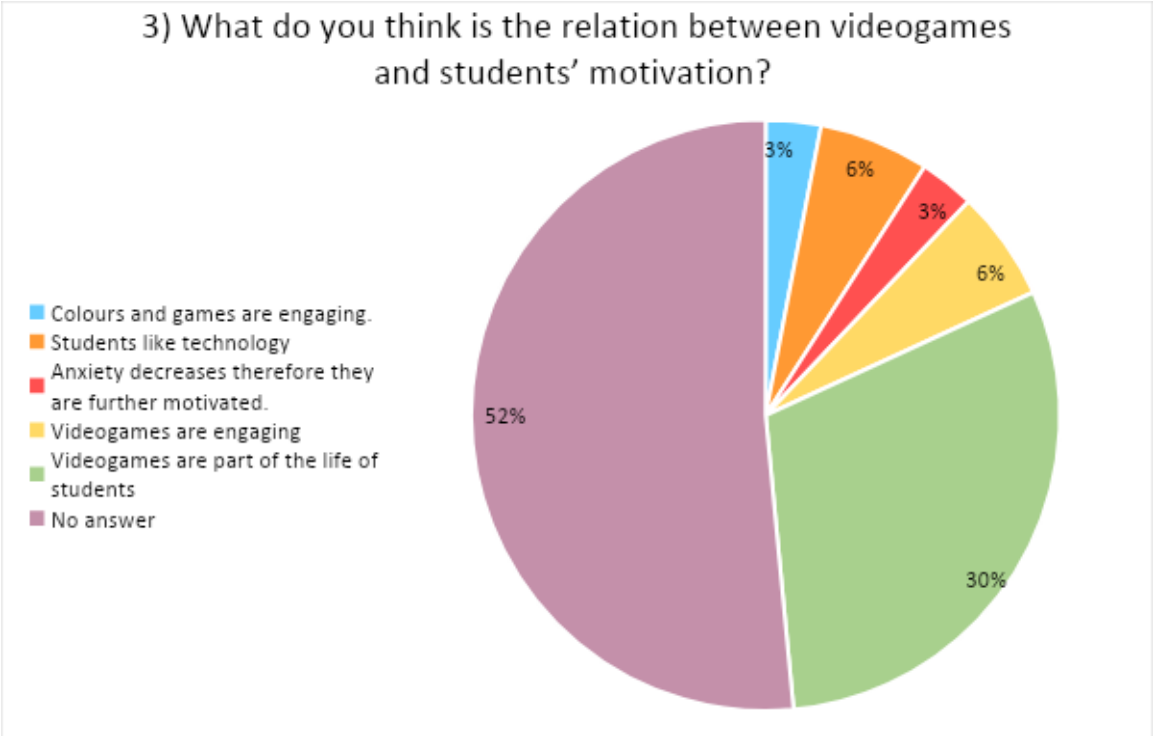
The following graphs describe the information obtained from the participants according to their perspectives regarding the use of an inclusive videogame and it's possible effectiveness in an EFL classroom.



Before analysing question N°1, it is important to note that the following questions belong to the open answer category. That is to say, the group gathered all the input from the participants' answers and arranged them into these graphics. Question N°1 of the open answer questions aimed at determining whether the participants could infer the advantages from the use of gamification in the classroom. It is possible to see that the vast majority of the participants could see that videogames can engage students (67%) and that they improve socialisation and are meaningful to students (18%). On the other hand, only 3% of the participants saw no important advantage to the use of video games in the classroom.



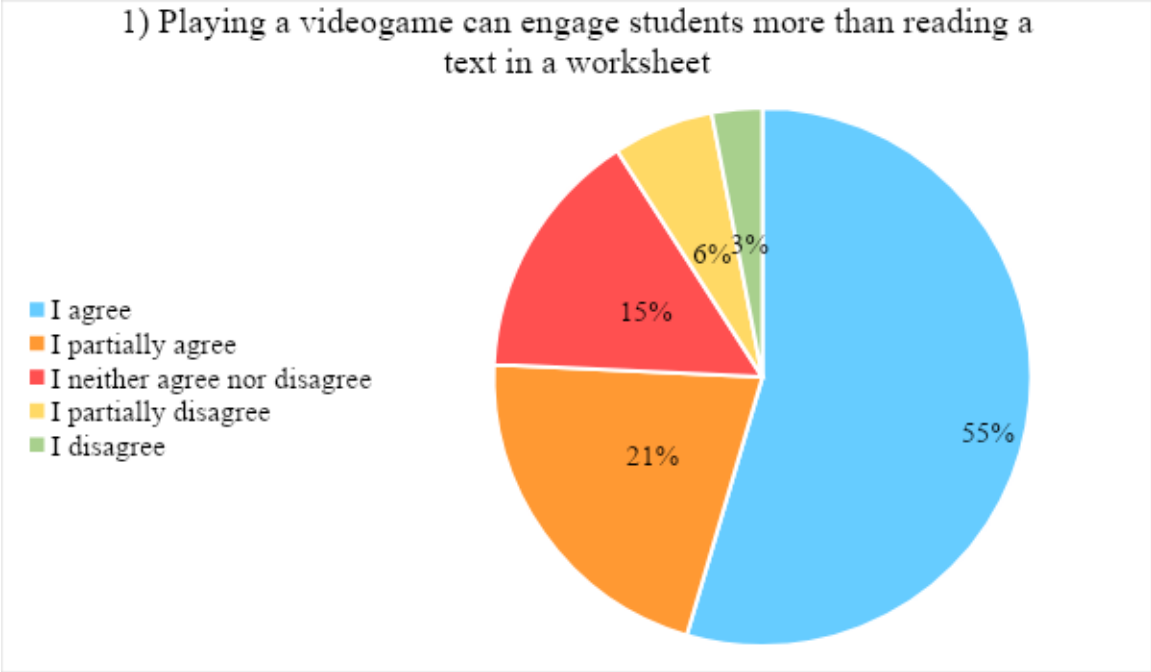
Question N°2 from the open answer questions targets the opposite to question N°1. This question sought to find out if the participants could see any disadvantage to the use of video games in English classes to students with SEN. Some participants believe that videogames for students with SEN can be distracting (27%); others that they can be overstimulating (12%), not educational (12%), or that students would not see them as a learning tool and would not play them (12%). Surprisingly, only 6% of the participants saw no disadvantage to the use of videogames in an English class with students with SEN.



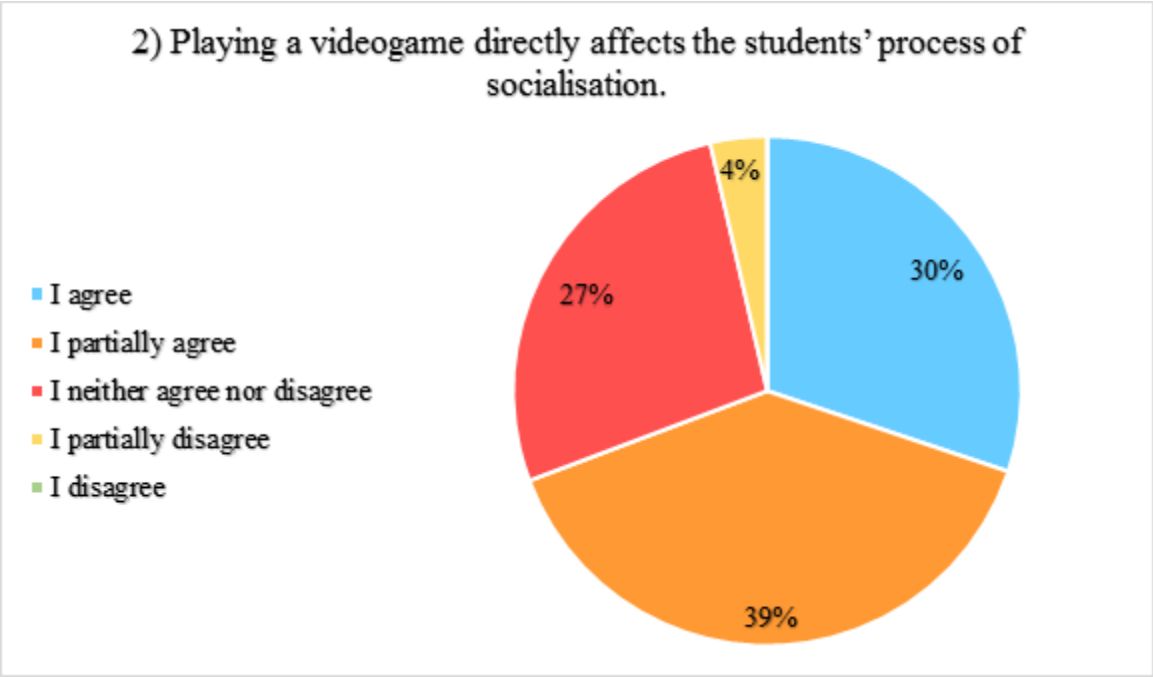
Question N° 3, from the open answers questions, focuses on identifying the relationship between motivation and videogames as a tool for learning. Half of the participants did not answer this question, which may be because they did not see any link between the two factors. Only 30% of the participants believe that videogames can be linked to motivation because students play videogames daily, as videogames are part of the students' lives. Moreover, 12% of the participants believe that the structure of videogames can be engaging; as videogames are made to entertain. Surprisingly, 3% of the participants believe that videogames can be related to mental health, as they stated that anxiety levels can be reduced by playing them.

Section 4: Likert Scale.

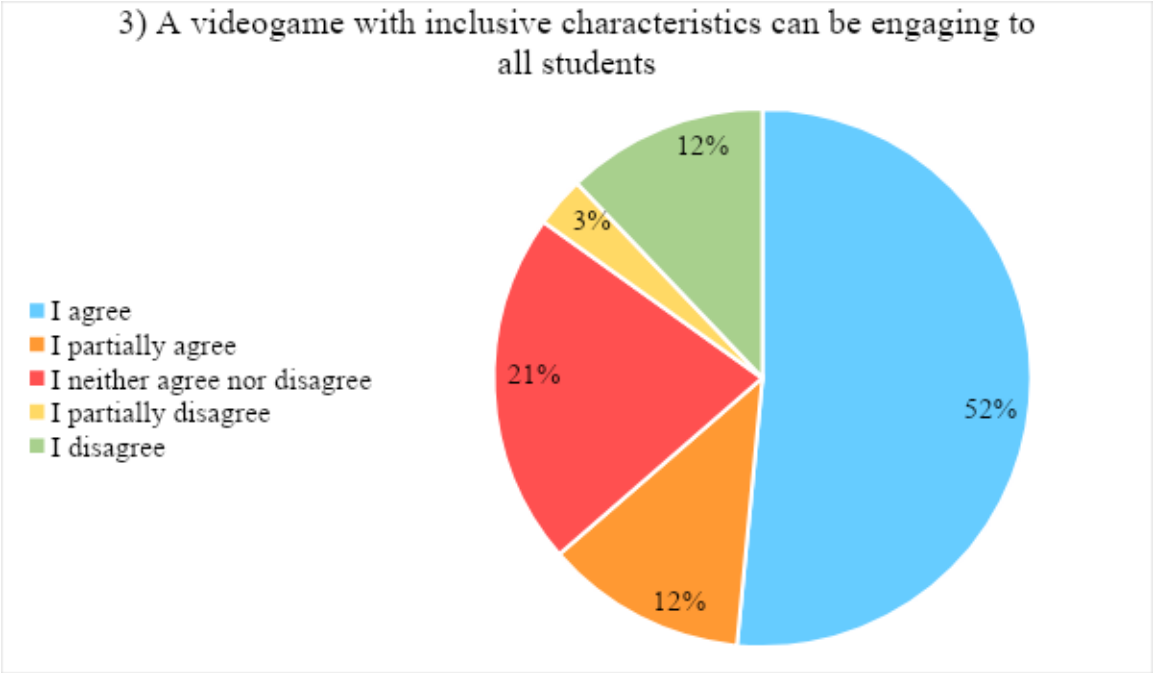
The following graphs evaluate the perceptions of teachers regarding how they would feel by implementing an inclusive videogame in their EFL classes, taking into consideration different factors such as their students' behaviour during the lesson.



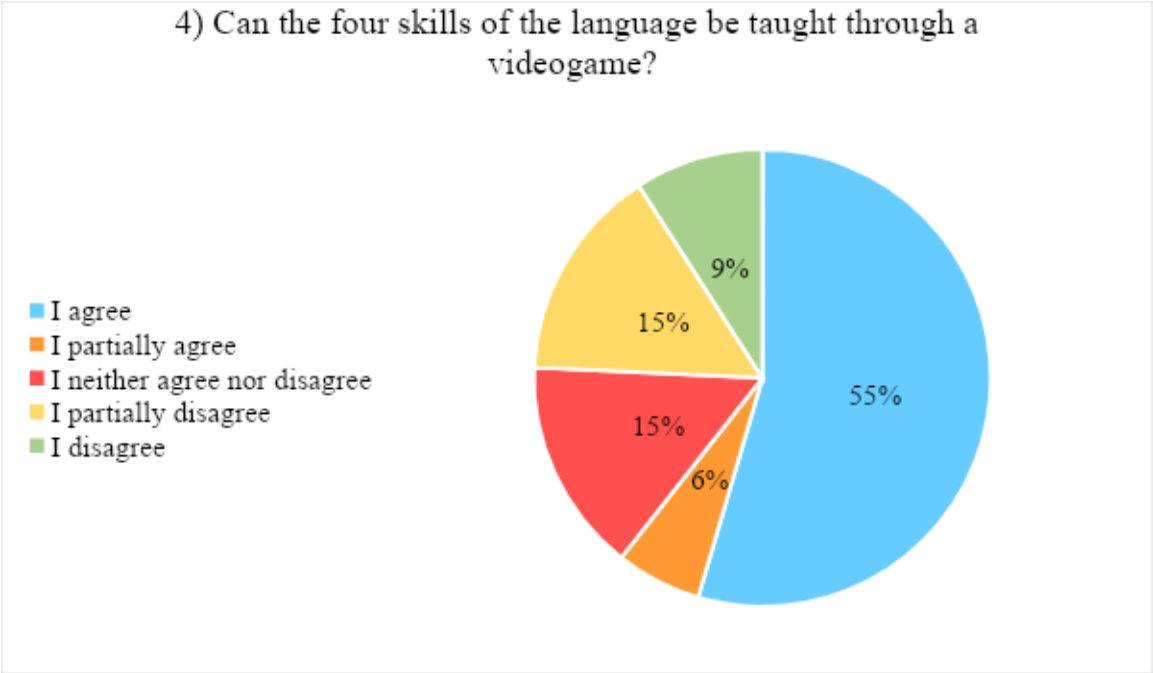
The first graph describes the participants' beliefs regarding their students' engagement levels by comparing two different spare time activities: playing video games or reading books. As it can be observed, the vast majority of the participants strongly agree with the assumption that videogames are more likely to engage students than books, with 55% of the votes. Also, it is important to highlight that two of the following percentages, 21% and 15% of the participants are indecisive or do not entirely consider videogames as engaging.



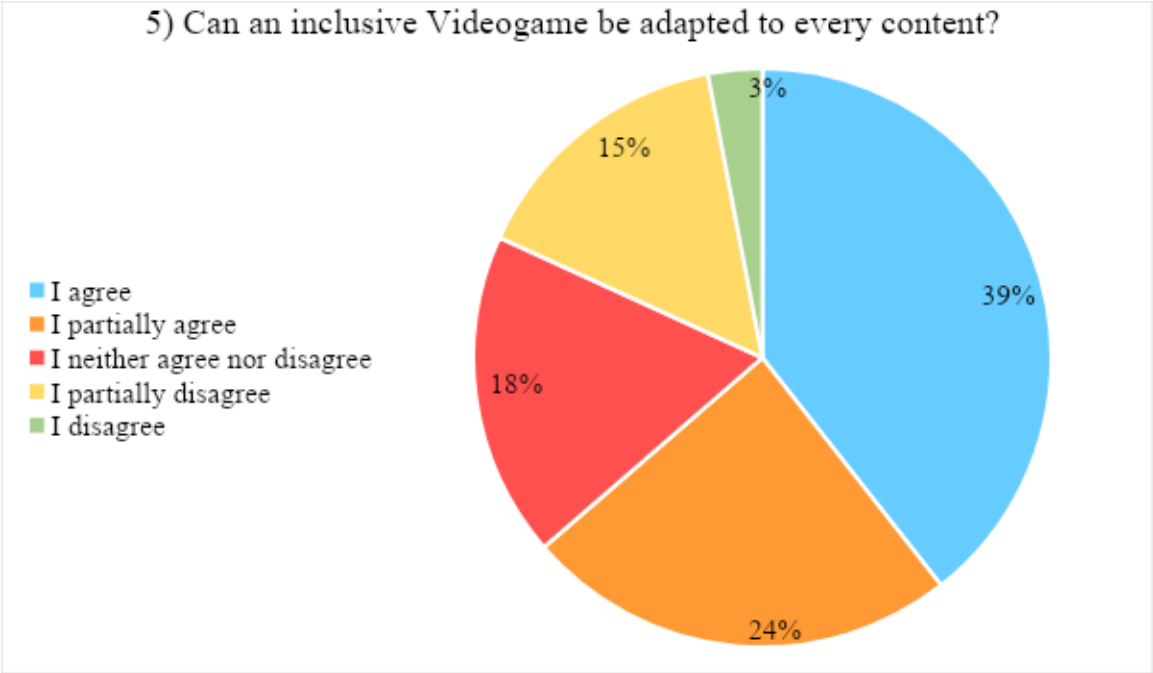
The second graph describes the participants' thoughts on the students' process of socialisation and if it is directly affected by the use of videogames. The results show that 39% of the participants partially agree that their students are affected by playing videogames, followed by 30% of participants who agree in its entirety that it directly affects the socialisation process; and 27 % of the participants neither agree nor disagree. These results might be since most videogames are played in stationary consoles such as the PlayStation console. The same console that has broken records with the PS4 becoming the second best-selling console ever with 102,8 million sales, only being beaten by the PS2 with 157,7 million sales (Felix Richter, 2019).



The third graph describes what the participants think about the engagement of a videogame with inclusive characteristics, which refers to a videogame for all types of students. The results show that the 52% of the participants fully agree that a videogame with inclusive characteristics can engage to all students. Following most of the participants, there is an important number of the participants who have declared that “neither agree nor disagree”, which means that they have an uncertainty because they have seen no videogame with those considerations. It is also necessary to point out that both options “I partially agree” and “I disagree” where chosen by a 12% showing that there is a group of professionals who strongly believe that such a project won’t succeed whereas another group is uncertain.



The fourth graph describes the participants' preference towards the teaching of the four skills of the language and if they can be taught through a videogame. Most of the preferences, with 55% of the participants, declared that they fully agree that the four skills can be taught using a videogame, a similar percentage of preference as in graph N°3, where it can be observed that 52% of the participants fully agree, therefore the such project would be strongly supported by quite an important amount of professionals. On the other hand, it is interesting to mention that again both options "I neither agree nor disagree" and "I partially disagree" were chosen by 12% of the participants, which says that the points of uncertainty and disagreement reach almost half of the preferences, being followed by the options of partial and fully disagreement. These last results might be partly because some professionals might not have information regarding this matter.



The fifth graph shows the agreement that the participants have regarding the adaptation of an inclusive videogame to any EFL content. The results show that 39% of the participants completely agree that an inclusive videogame can be adapted to every content, whereas 24% of the participants have declared that they partially agree, followed by 18% with the option of "I neither agree nor disagree", showing their uncertainty about the video game adaptability. In addition, 15% chose the option "I partially disagree". Finally, 3% of the participants disagree that it can be adapted to every content. Some of these results could be the consequence of the lack of information regarding videogames and their connection with teaching.

7.5. Observations of the implementation of the videogame in the schools

As stated before, the videogame was implemented in two different Chilean schools. The purpose of said visits was to investigate whether the videogame fulfils its pedagogical purpose in an actual school. The reactions of the students can be found in Appendixes D 01 and D 02.

In the school, Francisco Encina, implementing the videogame was deemed flawless. Although the class size can be considered small according to Chilean school policies, all 25 students actively took part in the proposed activity and asked questions regarding the videogame and its contents. Not only the students gave positive feedback but also the English teacher of the school. In his words, the videogame was enriched with its colours and relevant content. However, it could have been useful to add sound and to have explained the contents better before the videogame was shown. Hence, the activity was successful due to the students and the English teacher's positive feedback.

On the other hand, at Instituto Colegio Santa María, the experience was not optimal. The researchers had several problems related to technology. To begin with, the school had a PC in every classroom. One of the researchers asked the school if they could download the videogame in the PC to project it in the class, and the school accepted. When trying to download the videogame into the PC, the teacher realised that we needed permission from the technician of the school. Later, when the technician did not show up, the researchers went to look for their PC (with the game already downloaded). When the researchers went to connect their laptop (with the videogame on) with the projector, it did not connect successfully. Thus, not having been able to project the videogame, the researchers had to adapt to the situation and gathered all 19 students in a semicircle. Then, the researchers showed them the game from their laptop, creating other issues such as students not being able to see the videogame in its entirety, therefore allowing students to act disruptively. After the videogame was shown, the researchers asked the students what were their thoughts on it. The students said that they liked the simplicity of it, its colours and its contents. However, they felt that the technical issues experienced during the class could be replicated in other contexts, thus ruining the gaming experience. The teacher did not give us feedback on the videogame or its implementation.

It is important to state that in the School Francisco Encina; the researchers showed the latest version of the videogame, whereas, in Instituto Colegio Santa María, they were not able to do so, as they had to show the students the version downloaded in the laptop which

was the one prior. This created an issue not only to the students in Colegio Instituto Santa María but for the researchers as well. When the researchers asked the school if they could re-visit the students, the school denied permission because of external factors.

Both visits applied to the investigation as they showed some issues that teachers may have when applying this videogame in their classes.

Conclusions

This dissertation was established in the context of searching for an innovative strategy with SEN considerations in the learning process of the English language acquisition. In Chile, Special Education Needs have been superficially explored, although the drafting and application of laws in the area denotes a concrete interest in the improvements in the current system. Unfortunately, implementing these laws into specific practices in the classroom is considered as either the teacher's responsibility or on the individual administration of each school. In the last years, the attempts at designing more inclusive teaching resources have been significant. The practice of Gamification in Chile and the world has become more frequent and has proven to be effective in various context, including the areas of interest of this dissertation; TEFL and inclusion. Nonetheless, there has been little research on the application of gamification as an effective practice within both previously mentioned contexts. Bearing this in mind, this piece of work is entirely focused on the development of research to design a videogame with SEN considerations.

This dissertation used an exploratory mixed research model intending to design and implement a videogame with SEN considerations for 7th-grade students in Chilean Schools, which is aimed to improve the learning experience of students with SEN in the Chilean classrooms. The research question was focused on measuring the extent to which the existent research, and the personal opinions of those involved in an educational community, could lead to an effective development of a videogame which would be appealing and motivating while it enhances the learning process of English language for students with and without SEN, in an inclusive environment.

Firstly, the literature in the topic was reviewed to reveal the existence of previous attempts in the matter, as well as the implications to consider when intervening pedagogically. Secondly, a complete questionnaire gathered information about the influence and current perceptions of the topic within the EFL teaching community. Then, a videogame was designed and applied in a controlled activity in a Chilean classroom. Finally, the

videogame was put into practical experimentation to corroborate the validity and levels of achievement of the purpose of the activity.

According to current statistics, the most common SEN types in Chile are Autistic Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and Attention Deficit Disorder (ADD). This data was taken into consideration for the designing of the videogame to enhance the learning experience of students with the mentioned SEN types. On the one hand, teachers in Chile denote the priority in which SEN considerations stand, besides the necessity of searching new instruments and tools to develop inclusive learning. On the other hand, teachers mark and highlight videogames as an effective tool in EFL classes. However, teachers could vaguely recall and identify proper tools and instruments to help and enhance technologies, specifically videogames, to develop said aspects when teaching. Consequently, it is coherent to search for new tools that help teachers in the practice of new inclusive methods to add the use of restrained technology in classes.

Findings

The results of the analysis, after implementing the videogame in the initial part of the class, showed the effectiveness of gamified activities in the learning of EFL. Additionally, it showed that students became considerably interested in the narration and development of the characters. According to the students' comments mentioned to the observers and included in the observation guidelines, such experience help them feel involved in classes at the same time that the experience felt natural and caught the interest of students with SEN. The purpose of this work is aimed at providing an engaging activity, which would be at the disposition of every teacher who wants to use the videogame with inclusive characteristics. Thus, this experience can be considered as a valid exercise in the development of EFL teaching in an inclusive classroom with SEN considerations.

Recommendations

For further considerations, it is important to point out the relevance of the teachers' role and the general school communities' importance in the search for new tools and implement new practices which hold an inclusive perspective. Gamification has proven to be effective in Chilean classrooms in the context of EFL teaching; however, there are few tools available in the mentioned area, so the development of ICTs and Softwares in this subject is a valid research focus. Additionally, the exploration of these concepts in various contexts might generate more robust and distinctive results; besides certain variations in the feedback given by experts and players. It is also relevant to explore new videogames formats in which the approaches addressed in this piece of work could be fruitful.

In terms of the educational field to which this dissertation expects to contribute, it is of tremendous importance to continue developing this line of research that understands technology as a learning tool at the disposition of the educational community. At the same time, it is necessary to highlight that the number and differences of the students to which the teacher is exposed represent the complexity and uniqueness of each student, regardless if they have experienced a special educational need or not. Another aspect worth mentioning is the possibility of performing investigations of several types of SEN which interplay among each other, such as this research group considered these three (ASD, ADD and ADHD). This would be a manner of better understanding, adapting and attending the diversity present in schools and contributing to the inclusion process of the country instead of labelling and segregating students with SEN.

The final observation to make is that as well as there are fields thoroughly explored than others, there are SEN types studied and analysed in more depth than others. It is true that some of them, such as the ones selected by this dissertation, may have more features in common, or that regular education cannot fulfil the necessities of a student with a severe SEN type, regardless of both reasons, it is indispensable to encourage future teachers to see a videogame as a possibility when teaching and most importantly, to be familiarised with the concept that has been discussed in the present work.

Limitations

Among the limitations, there are those caused by internal factors, such as the main characteristics of the videogame and external factors, such as the contexts where the videogame can be applied.

Internal factors

The videogame was designed to be as inclusive as possible. Nonetheless, we focused on the main characteristics of three SEN types: ADD, ADHD, ASD. In fact, some participants in our survey asked about the applicability of the videogame when there are students with visual impairment.

There was a large amount of information about both videogames and SEN; however, it was difficult to find information about the relation between both.

There was little information or almost no information about videogames with SEN considerations concerning the Chilean context.

External factors

The videogames require at least a computer or laptop to be reproduced. The videogame can be applied in many computers simultaneously by the students, in a computer-controlled by a teacher if projected. Nevertheless, if there is no computer available it is impossible to reproduce the videogame.

The videogame covers Unit Four of the Chilean curriculum which is Green Issues. Unfortunately, if the teacher is working with another unit, the videogame would be decontextualised.

The research group tested the videogame in only two schools because of the difficult context in Chile, which did not allow us to test the videogame in more schools.

Despite of the aforementioned, the found limitations should be considered maybe as the start point for future research regarding the aspects to include when approaching inclusion as the aim to improve in the relation of the use of innovative technologies as a pedagogical strategy.

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Appendices

Appendix A: Letter to EFL teachers for taking the survey

Universidad Metropolitana de Ciencias de la Educación

Facultad de Historia, Geografía y Letras

Departamento de Inglés

Dear EFL Teachers,

We are a group of students from the English Department at Universidad Metropolitana de Ciencias de la Educación (UMCE) who are currently working on our Dissertation. The title of our project is "The use of a videogame with SEN considerations for the teaching learning process of English as a foreign language for 7th graders, in Chilean High Schools." Said videogame will be implemented in experimental classrooms of EFL classes so as to teach all students, with and without SENs. This dissertation project will enable us to obtain our undergraduate degree in TEFL.

The purpose of this letter is to kindly ask you to fill a short survey for us to know your opinion regarding the implementation of a videogame in the EFL classroom. The aim of this survey is to gather statistical information in order to produce a brief compendium of suggestions and opinions regarding the usage of video games in the EFL class.

We kindly ask you to fill out the following form, it should not take longer than 5 minutes. Your participation in this survey is fundamental for the completion of this project and all of your responses will be kept confidential. No personal identifiable information will be associated to your responses or to any reports of these data.

Appendix B: "**Survey: The use of a videogame with SEN considerations for the teaching-learning process of English as a foreign language for 7th graders, in Chilean High Schools."**

Section 1: General Information

1) In what region do you work?

- Región de Tarapacá
- Región de Antofagasta
- Región de Atacama
- Región de Coquimbo
- Región de Valparaiso
- Región de O'Higgins
- Región del Maule
- Región del Bío-Bío
- Región de la araucanía
- Región de los lagos
- Región de Aysen
- Región de Magallanes
- Región Metropolitana
- Región de los Ríos
- Región de Arica y Parinacota
- Región de Ñuble

2) In what type of school do you work?

- Public School
- Private School
- Subsidized School

3) How long have you been teaching?

- 0-5 Years
- 5-10 Years

- 10-15 Years
- 15 or more Years

Section 2: Closed Questions. Please answer the following questions.

1) Have you ever looked for resources that might help you to adapt the content of your EFL classes for students with SEN?

- Yes
- No

2) Have you ever read or come across information about Gamification?

- Yes
- No

3) Have you ever applied exercises that have been gamified or involve certain game elements?

- Yes
- No

4) Have you ever used a videogame or cellphone application with the intention of teaching or improving your students' english skills?

- Yes
- No

5) Do you believe that the use of a videogame can improve the learning of English as a foreign language?

- Yes
- No

6) Do you think that using videogames could be beneficial for applying the national curriculum objectives for the English subsector?

- Yes
- No

7) Do you think that students will be engaged in learning English through an inclusive Videogame?

- Yes
- No

8) Do you know any videogame designed to include students with SEN?

- Yes
- No

Section 3: Open Questions. Please answer the following questions briefly in no more than 3 lines.

1) Can you think of any advantage of the use of videogames to teach English to students with SEN?

_____

_____

_____

2) Can you think of any disadvantage of the use of video games to teach English to students with SEN?

_____

_____

_____

3) What do you think is the relation between videogames and students' motivation?

_____

_____

_____

Section 4: Likert Scale. Mark the option that is closer to your opinion regarding each sentence

1) Playing a videogame can engage students more than reading a text in a worksheet

a. I agree
b. I partially agree
c. I neither agree nor disagree
d. I partially disagree
e. I disagree

2) Playing a videogame directly affects students' socialisation

a. I agree
b. I partially agree
c. I neither agree nor disagree
d. I partially disagree
e. I disagree

3) A videogame with inclusive characteristics can be engaging to all students.

a. I agree
b. I partially agree
c. I neither agree nor disagree
d. I partially disagree
e. I disagree

4) Can the four skills of the language be taught through a videogame?

a. I agree
b. I partially agree
c. I neither agree nor disagree
d. I partially disagree

e. I disagree

5) Can an inclusive Videogame be adapted to every content?

a. I agree
b. I partially agree
c. I neither agree nor disagree
d. I partially disagree
e. I disagree

Appendix C: Letter of permission to apply the videogame in schools.

UNIVERSIDAD METROPOLITANA DE CIENCIAS DE LA EDUCACIÓN
FACULTAD DE HISTORIA, GEOGRAFÍA Y LETRAS
DEPARTAMENTO DE INGLÉS

Señor (a)
Cecilia Sanhueza
Colegio Instituto Santa María

Santiago, 03 octubre, 2019

PRESENTE

Somos estudiantes de quinto año de la carrera de Licenciatura en Educación con mención en Inglés y Pedagogía en Inglés de la Universidad Metropolitana de Ciencias de la Educación, UMCE.

Actualmente nos encontramos desarrollando nuestro Seminario de Título que lleva por nombre "T*he use of a videogame with SEN considerations for the teaching learning process of English as a foreign language for 7th graders, in Chilean High Schools*" (El uso de un videojuego con consideraciones NEEs en el proceso de enseñanza aprendizaje de idioma Inglés, como lengua extranjera para estudiantes de 7mo básico en Colegios Chilenos).

Por medio del presente, y para fines del desarrollo de nuestro seminario de título, solicitamos a usted el permiso correspondiente para realizar una pequeña intervención en el curso 7°A, durante el periodo de dos bloques pedagógicos (3° y 4° bloque) el día Lunes 07 de Octubre en este semestre académico. La intervención consiste en aplicar un breve videojuego en inglés para ejercitar vocabulario.

Agradecemos de antemano su tiempo y colaboración

Saludan atentamente,

Graciela Aciares
Oscar Acosta
Daniela De la Jara
Eduardo Escobar
J. Pablo Esparza
Camila Perez
Lucas Sanchez
Felipe Torrejón

“The use of a videogame with SEN considerations for the teaching-learning process of English as a foreign language for 7th graders, in Chilean High Schools”

Appendix D: "Observation Guide: Videogame in 7th grade"

- Name of the school:
- Name of the guide teacher:
- Number of students:
- Date:
- Thesis student as teacher:
- Thesis student as observant :

Observation points	Comments
Describe the procedure: 1. How did the class begin? (was there a recap or the content was new to the students? 2. Where did the class take place? (in the same classroom as the class usually takes place, a computer room, an English room, etc)	
Did the game start in the pc? (Was the installation easy? where there any problems?)	
How where the students divided? (In groups of three, four? or the whole class was one group?)	
Were the students engaged? (How many were actually participating; how many were not paying attention?)	

In your opinion, was the videogame fun for the students?	
In your opinion, was the videogame useful for the purpose of the class?	
Please, ask the teacher to give a brief feedback of the videogame.	

Appendix D 0.1: Observation Guide in Francisco Encina School

- Name of the school: Francisco Encina
- Name of the guide teacher: Raul Vásquez
- Number of students: 25
- Date: October 17th, 2019
- Thesis student as teacher: Eduardo Escobar
- Thesis student as observant: Oscar Acosta

Observation points	Comments
Describe the procedure: 1. How did the class begin? (was there a recap or the content was new to the students? 2. Where did the class take place? (in the same classroom as the class usually takes place, a computer room, an English room, etc)	1. The contents was new for some of the students, some of the students already knew some of the concepts. 2. The session took place on their classroom.
Did the game start in the pc? (Was the installation easy? where there any problems?)	There were not problems neither running the game nor with technical matters

How where the students divided? (In groups of three, four? or the whole class was one group?)	The students participated as a whole.
Were the students engaged? (How many were actually participating; how many were not paying attention?)	As a class of 25 students, most of them were highly participatory and engaged, having 23 students (2 students did not participate at all) asking question and willing to participated on the exercises.
In your opinion, was the videogame fun for the students?	For most students the videogame was fun, not entirely, this due to the fact that some students suggested that they would have liked to interact more, for example having all students playing the videogame at the same time.
In your opinion, was the videogame useful for the purpose of the class?	The purpose of teaching vocab was fulfilled, it was highly useful, as mentioned before, some of the students already knew certain concepts, but other did not know anything regarding the same concepts.
Please, ask the teacher to give a brief feedback of the videogame.	In terms of colours and engagement, this videogame fulfilled all the items possible to be useful in class. In terms of vocabulary, it would have been useful to explain a bit more about them, maybe more images and sound.

Appendix D 0.2: Observation Guide in Instituto Colegio Santa María.

- Name of the school: Colegio Instituto Santa María
- Name of the guide teacher: Josette Maffete.
- Number of students: 19 students, 3 missing.
- Date: 07/10/2019
- Thesis student as teacher: Daniela de la Jara
- Thesis student as observant: Graciela Aciares

Observation points	Comments
Describe the procedure: 1. How did the class begin? (was there a recap or the content was new to the students? 2. Where did the class take place? (in the same classroom as the class usually takes place, a computer room, an English room, etc)	The warm-up consisted on evaluating how much content did the students know. After ensuring that students had knowledge of some of the words of the vocabulary. The content therefore was brand-new for the students. The input was conducted in a fast pace and entirely in English. The student teacher would ask a question and either draw on the board or gesture to the students. The class took place on the students' classroom, so no changes were experienced.
Did the game start in the pc? (Was the installation easy? where there any problems?)	At the beginning, the school's resources (computer, projector and cable) were used. The projector started smoothly on the school's PC, but upon downloading the game, the computer would ask for an special password which only administrative staff has, and neither the examiners nor the teacher knew the password. The guide teacher called the school's technician but he failed to appear. The student teacher decided to go look for her laptop and use an old version of the game, as the download time was too extensive. Upon using the school's cable on the laptop, there were severe difficulties on projecting on the board, and a lot of time was wasted attempting to make it work.

	After a number of attempts, the student teacher decided to just show the game on her laptop and ask students to gather around so they could have a clear view.
How where the students divided? (In groups of three, four? or the whole class was one group?)	Students were not divided into groups. As the entire class consisted on only 19 students, students made one big group.
Were the students engaged? (How many were actually participating; how many were not paying attention?)	For most of the class, students were attentive and willing to learn. But upon playing the game, just a small number of students were participants. Students who were at the front of the group would be participative, while those at the back were no paying attention.
In your opinion, was the videogame fun for the students?	Yes, the game was fun for the students.
In your opinion, was the videogame useful for the purpose of the class?	It doesn't apply.
Please, ask the teacher to give a brief feedback of the videogame.	No comments.

Appendix E: Videogame Script

Main menu screen

The adventure of Sam and E-bot “at a lost for words, discovering the world”
(Game Options) Start and Exit

Game instructions

(Picture of Sam) “This is Sam, you can control Sam using the arrow keys, or the W A S D.

(Picture of E-bot) “This is E-bot, you can interact with it by pressing the space bar when you are near E-bot.”

“Let’s find E-bot and help Sam through this adventure”

“Ready? (press P for fullscreen”)

Gameplay screen

Sam & Friends: Hey! Let’s go to the forest. (Need help? Press and Hold H)

E-bot: Are you ready? (Click over the response)

Sam: **YES**/NO

(First Room “Lake”. Rain appears when moving Sam)

E-bot: What is happening? Wildfire-Flood-Earthquake.

(Clicking on the correct answer)

Sam: It’s a **Flood**.

E-bot: Oh! Flood!

(Second Room “Desert”. The wind blows)

(Pressing ENTER on E-bot. A tornado appears)

E-bot: What is it? Tornado-Wildfire-Drought

(Clicking on the correct answer)

Sam: It’s a **Tornado!**

(Third Room “City”. The ground is shaking)

E-bot: What happened? Flood-Avalanche-Earthquake.

(Clicking on the correct answer)

E-bot: Oh! An Earthquake!

(Forth Room “Desert”)

(Pressing ENTER on E-bot)

E-bot: What is this? Tornado-Drought Avalanche.

(Clicking on the correct answer)

Sam: It’s a Drought

(Fifth Room “Forest on fire”)

(Pressing ENTER on E-bot)

Sam: What is the problem here? Flood-Wildfire-Tornado.

(Clicking on the correct answer)

Sam: It’s a Wildfire!

(Sixth Room “Ending”)

(Sam and E-bot on the screen)

E-bot: Thank you, Sam!

(Seventh Screen “Thank you”)

Game Credits

“Thanks for playing!” “Press ENTER to go back to the main menu”

Appendix F: Videogame Validation request

Universidad Metropolitana de Ciencias de la Educación

Facultad de Historia, Geografía y Letras

Departamento de Inglés

Santiago, 26 de julio 2019

Señor:
Francisco Pino Sáez
Diseñador c/m en Comunicación Visual
Académico de la Escuela de Diseño
Universidad Tecnológica Metropolitana
PRESENTE

Somos estudiantes de quinto año de la carrera de Licenciatura en Educación con mención en Inglés y Pedagogía en Inglés de la Universidad Metropolitana de Ciencias de la Educación. Actualmente, nos encontramos desarrollando nuestro Seminario de Título que lleva por nombre “The use of a videogame with SEN considerations for the teaching learning process of English as a foreign language for 7th graders, in Chilean High Schools”. Este proyecto tiene como finalidad la implementación de un videojuego en 7º Básico para el aprendizaje del idioma Inglés como Lengua Extranjera para todo tipo de alumnos, incluyendo aquellos con Necesidades Educativas Especiales. Por medio de la presente, y para fines del correcto desarrollo de nuestro seminario, es que solicitamos a usted asistencia en la validación del instrumento de investigación adjunto (Videojuego).

Agradecemos de antemano su tiempo y colaboración.

Saludan atentamente,

Graciela Aciares, Oscar Acosta, Daniela De la Jara, Eduardo Escobar, Juan Pablo Esparza, Camila Pérez, Lucas Sánchez y Felipe Torrejon.

Appendix F 0.1: **Videogame Validation from Prof. Francisco Pino Sáez**

Universidad Metropolitana de Ciencias de la Educación

Facultad de Historia, Geografía y Letras

Departamento de Inglés

Santiago, 05 de Septiembre de 2019

Estudiantes Seminario Prof. María Eugenia Hernández
PRESENTE

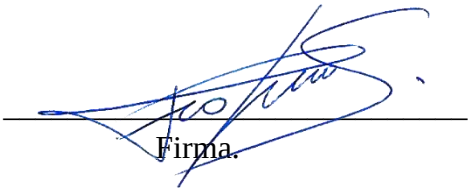
Habiendo revisado el ejercicio propuesto para el desarrollo en aula en el contexto de su Seminario de Título (videojuego), que lleva por nombre "The use of a videogame with SEN considerations for the teaching learning process of English as a foreign language for 7th graders, in Chilean High Schools" y considerando el objetivo del estudio que están desarrollando el cual contempla la implementación de un videojuego en 7º Básico para el aprendizaje del idioma Inglés como Lengua Extranjera para todos los estudiantes incluyendo los que tienen Necesidades Educativas Especiales, me permito hacer las siguientes observaciones:

- El ejercicio revisado cumple con un diseño efectivo en el marco del desarrollo de un videojuego con los fines propuestos.
- Se realizan una serie de observaciones a las cuales el proyecto debe responder, dichas observaciones fueron expresadas de forma verbal con los estudiantes a cargo del proyecto, las cuales adicionalmente, serán descritas en la descripción de dicho ejercicio del seminario de título.

En base a lo mencionado anteriormente, valido el ejercicio y les deseo éxito en la realización de su estudio.

Se despide muy atentamente,

Prof. Francisco Pino Sáez
Académico de la Escuela de Diseño
UTEM



Firma.

Appendix F 0.2: Survey Validation from Prof. Roberto Pichihueche

Universidad Metropolitana de Ciencias de la Educación

Facultad de Historia, Geografía y Letras

Santiago, 18 de junio de 2019

Estudiantes Seminario Prof. María Eugenia Hernández
PRESENTE

Habiendo revisado el instrumento propuesto para recopilar información en el contexto de su Seminario de Título, que lleva por nombre "The use of a videogame with SEN considerations for the teaching learning process of English as a foreign language for 7th graders, in Chilean High Schools" y considerando el objetivo del estudio que están desarrollando el cual contempla la implementación de un videojuego en 7º Básico para el aprendizaje del idioma Inglés como Lengua Extranjera para todos los estudiantes incluyendo los que tienen Necesidades Educativas Especiales, me permito hacer las siguientes observaciones:

- La encuesta no tiene imprecisiones de tipo léxico y morfosintáctico que pudiesen impedir la comprensión de las preguntas y su correspondiente respuesta.
- En lo que se refiere al aspecto metodológico, me parece que las diferentes secciones de la encuesta permitirán recopilar información relevante en el marco de su estudio y triangular las respuestas de las secciones mencionadas.

En base a lo mencionado anteriormente, valido el instrumento y les deseo éxito en la realización de su estudio.

Se despide muy atentamente,

Prof. Roberto Pichihueche Mellado
Director Departamento de Inglés
UMCE