UNIVERSITAT POLITÈCNICA DE VALÈNCIA

FACULTAD DE BELLAS ARTES

DEPARTAMENTO DE COMUNICACIÓN AUDIOVISUAL, DOCUMENTACIÓN E HISTORIA DEL ARTE

DOCTORAL THESIS

CULTURAL LITERACY ACQUISITION THROUGH VIDEO GAME ENVIRONMENTS OF A DIGITALLY BORN GENERATION

AUTHOR:

OLENA SHLIAKHOVCHUK

SUPERVISORS:

MARÍA FERNANDA PESET MANCEBO

ADOLFO MUÑOZ GARCÍA

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Cultural literacy acquisition through video game environments of a digitally born generation

A thesis submitted for

the degree of Doctor in Communication and Cultural Industries at Universitat Politècnica de València (UPV)

Autor: Olena Shliakhovchuk

Supervisors: María Fernanda Peset Mancebo

Adolfo Muñoz García

July 2019

Acknowledgements

This thesis would not be possible without the help, encouragement and support of my supervisors who challenged my arguments, fed my curiosity and offered me inspiring concepts and ideas.

I need to express my thanks to the participants of the experiments of the research for trusting me and helping me to test my hypotheses. Special thanks need to be given to the respondents of the survey for providing such exciting and stimulating answers.

My heartfelt gratitude to my friends for their sincere interest in the topic of this thesis and for encouraging me to bravely press on in my times of doubt.

My deepest thanks to my family, without your encouragement, as well as emotional and financial support, I would not have completed this thesis.

Sincere thanks go to my better half whose unconditional love and support kept me going through endless writing days. I have got this far because you were behind me all the time.

Contents

Abstract

Modern video games are complex, diverse, immersive and pervasive, and their influence on society and people is far-reaching. Video games and their impacts were initially demonised, but over time research started assessing the positive effects of games on competencies and abilities connected to twenty-first-century skills that include cultural literacy. In line with this trend, this thesis examines how entertaining commercial titles, serious games, educational games and simulations can support players in learning and in acquiring skills that enhance cultural literacy. An analysis of the common trends for the skills and competencies needed for success in the twenty-first century —studied by UNESCO, the British Council, IBM, Google, LinkedIn, and the World Economic Forum, among others,— revealed that living in a VUCA (volatility, uncertainty, complexity and ambiguity) world requires a new, updated model of cultural literacy. This thesis proposes such a model.

A review was made of the recent literature on the impact and outcomes of video games, showing that video games can reinforce or weaken stereotypes; help to acquire cultural knowledge and develop intercultural literacy, socio-cultural literacy, cultural awareness, self-awareness, and the cultural understanding of different geopolitical spaces; and to some extent also facilitate the development of intercultural skills.

The heart of the thesis is an investigation into the effectiveness of video games for tackling difficult social issues such as migratory movements and the refugee crisis. Two studies were conducted one quantitative and the other qualitative that obtained heartening results for producers of empathy video games. Many participants reported feeling more empathy and less rejection towards migrants and refugees, as well as being more motivated to actively help people in need. Additionally, a broad survey revealed the AAA entertainment game genres, characters, and in-game elements and features that digital natives find attractive and those they miss and would like in the future. The findings also confirmed that games produce not only fun but also a great deal of learning. The English language, the basics of informatics, strategic thinking, geography and history, teamwork, cultural knowledge, perspective change, and creativity are all learnt and reinforced during video game play.

The evidence presented in this thesis suggests there is a demand for tools facilitating intercultural education. The high point of the thesis is the design of *Chuzme*, an educational digital game that focuses on raising cultural self-awareness and the acknowledgement of cultural bias in order to generate positive attitudes towards migrants, refugees and expatriates.

In summary, this thesis supports the idea that video games facilitate the acquisition of cultural literacy and provides evidence on the cultural, social and communication benefits of

gaming that hopefully encourages scholars to actively integrate video games in their teaching practice.

Keywords: games studies; intercultural communication, impact of video games, games-based learning, cultural literacy

RESUMEN

Los videojuegos modernos son complejos, diversos, inmersivos y muy extendidos, y su influencia en la sociedad y en las personas es muy profunda. Al principio, los videojuegos y sus impactos fueron demonizados, pero con el tiempo los estudios empezaron a evaluar sus efectos positivos en las competencias y habilidades relacionadas con las destrezas del siglo XXI, entre las que se encuentra la alfabetización cultural. Esta tesis sigue esta tendencia y examina el modo en que los juegos de entretenimiento comerciales, los juegos serios, los juegos educativos y las simulaciones pueden ayudar a los jugadores en su aprendizaje y en la adquisición de destrezas que mejoran su alfabetización cultural. Un análisis de las tendencias comunes en las destrezas y competencias necesarias para tener éxito en el siglo XXI (estudiadas por la UNESCO, el British Council, IBM, Google, LinkedIn y el Foro Económico Mundial) reveló que para vivir en un mundo VUCA (volátil, incierto, complejo y ambiguo) hace falta un modelo nuevo y actualizado de la alfabetización cultural. Esta tesis propone tal modelo.

Se hizo una revisión de la literatura reciente sobre el impacto y los resultados de los videojuegos. Dicha revisión mostró que los videojuegos pueden reforzar o debilitar los estereotipos, que ayudan a adquirir conocimientos culturales y a desarrollar la alfabetización intercultural, la alfabetización sociocultural, la conciencia cultural, la autoconciencia y el entendimiento cultural de diferentes espacios geopolíticos, y que hasta cierto punto facilitan el desarrollo de las habilidades interculturales.

El corazón de la tesis es una investigación sobre la efectividad de los videojuegos en el abordaje de problemas sociales difíciles como son los movimientos migratorios y la crisis de refugiados. Se realizaron dos estudios, uno cuantitativo y otro cualitativo, que obtuvieron resultados alentadores para los creadores de videojuegos de empatía. Muchos participantes informaron que sintieron más empatía y menos rechazo hacia los migrantes y refugiados, así como una mayor motivación para ayudar de forma activa a gente necesitada. Se hizo, además, una encuesta amplia que dio a conocer los géneros de entretenimiento AAA, los personajes, los elementos de juego y las características que los nativos digitales encuentran atractivos, así como los que echan en falta y que les gustaría ver en el futuro. Los hallazgos también confirmaron que los juegos no son solamente una fuente de diversión, sino también de mucho aprendizaje. El inglés, las bases de la informática, el pensamiento estratégico, la geografía y la historia, el trabajo en equipo, conocimientos culturales, el cambio de perspectiva y la creatividad... todo esto se aprende y refuerza con los videojuegos.

Las evidencias presentadas en esta tesis sugieren que hay una demanda para herramientas que faciliten la educación intercultural. El punto culminante de esta tesis es el diseño de Chuzme, un juego educativo digital que pretende elevar la autoconciencia (cultural) y el reconocimiento

del sesgo cultural con el fin de generar actitudes positivas hacia los migrantes, refugiados y expatriados.

En resumen, esta tesis apoya la idea de que los videojuegos facilitan la adquisición de la alfabetización cultural y aporta pruebas de que los videojuegos proporcionan beneficios culturales, sociales y comunicativos que espere animen a los profesores a integrar activamente los videojuegos en su práctica docente.

Descriptores: investigación sobre videojuegos, impacto de los videojuegos, comunicación intercultural, aprendizaje basado en juegos, alfabetización cultural

RESUM

Els videojocs moderns són complexos, diversos, immersius i molt estesos, i la seva influència en la societat i en les persones és molt profunda. Al principi, els videojocs i els seus impactes van ser demonitzats però amb el temps els estudis van començar a avaluar els seus efectes positius en les competències i habilitats relacionades amb les destreses del segle XXI, entre les quals es troba l'alfabetització cultural. Aquesta tesi segueix aquesta tendència i examina la manera en què els jocs d'entreteniment comercials, els jocs seriosos, els jocs educatius i les simulacions poden ajudar els jugadors en el seu aprenentatge i en l'adquisició de destreses que milloren la seva alfabetització cultural. Una anàlisi de les tendències comunes en les destreses i competències necessàries per tenir èxit en el segle XXI (estudiades per la UNESCO, el British Council, IBM, Google, LinkedIn i el Fòrum Econòmic Mundial) va revelar que per viure en un món VUCA (volàtil , incert, complex i ambigu) cal un model nou i actualitzat de l'alfabetització cultural. Aquesta tesi proposa aquest model.

Es va fer una revisió de la literatura recent sobre l'impacte i els resultats dels videojocs. La dita revisió va mostrar que els videojocs poden reforçar o debilitar els estereotips, que ajuden a adquirir coneixements culturals i a desenvolupar l'alfabetització intercultural, l'alfabetització sociocultural, la consciència cultural, l'autoconsciència i l'enteniment cultural de diferents espais geopolítics, i que fins a cert punt faciliten el desenvolupament de les habilitats interculturals.

El cor de la tesi és una investigació sobre l'efectivitat dels videojocs en l'abordatge de problemes socials difícils com són els moviments migratoris i la crisi de refugiats. Es van realitzar dos estudis, un quantitatiu i un altre qualitatiu, que van obtenir resultats encoratjadors per als creadors de videojocs d'empatia. Molts participants van informar que van sentir més empatia i menys rebuig cap als immigrants i refugiats, així com una major motivació per ajudar de forma activa a gent necessitada. Es va fer, a més, una enquesta àmplia que va donar a conèixer els gèneres d'entreteniment AAA, els personatges, els elements de joc i les característiques que els nadius digitals troben atractius així com els que troben a faltar i que els agradaria veure en el futur. Les troballes també van confirmar que els jocs no són només una font de diversió, sinó també de molt aprenentatge. L'anglès, les bases de la informàtica, el pensament estratègic, la geografia i la història, el treball en equip, coneixements culturals, el canvi de perspectiva i la creativitat ... tot això s'aprèn i reforça amb els videojocs.

Les evidències presentades en aquesta tesi suggereixen que hi ha una demanda per a eines que facilitin l'educació intercultural. El punt culminant d'aquesta tesi és el disseny de Chuzme, un joc educatiu digital que pretén elevar l'autoconsciència (cultural) i el reconeixement del biaix cultural amb la finalitat de generar actituds positives cap als migrants, refugiats i expatriats.

En resum, aquesta tesi dóna suport a la idea que els videojocs faciliten l'adquisició de l'alfabetització cultural i aporta proves que els videojocs proporcionen beneficis culturals, socials i comunicatius que esperi animin els professors a integrar activament els videojocs en la seva pràctica docent.

Descriptors: investigació sobre videojocs, impacte dels videojocs, comunicació intercultural, aprenentatge basat en jocs, l'alfabetització cultural

Part I: Cultural literacy as a twenty-first-century skill in video games research

Chapter One: Introduction

The latest cliché, the "*fourth industrial revolution*", has substantially changed all aspects of our lives, education included. Educational systems all over the world are under constant pressure to adapt in order to meet the needs of people working and living in technology-enriched environments. In the wake of discussion of how Artificial Intelligence (AI) technology aims to replace the human mind, "*twenty-first-century skills*" have been gaining an enormous amount of attention from researchers and practitioners (Qian & Clark, 2016). The twenty-first-century context requires a new set of competencies to face modern and future challenges beyond the obvious information and communication technology (ICT) literacy. AI is making soft skills increasingly important, as these are precisely the type of skills that cannot be automated. Communication, collaboration, social and cultural skills, creativity, critical thinking, problem-solving, productivity in a globalised world, learning to learn skills, self-direction, planning, flexibility, risk-taking, conflict management, and a sense of initiative and entrepreneurship are all in high demand. Fifty-seven per cent of senior leaders today say soft skills are more important than hard skills (Spar & Dye, 2018).

Prensky (2004) observes that youth today communicate, buy and sell, search for information, and socialise differently; technology has become "an entire strategy for how to live, survive and thrive in the 21st Century". Survey studies suggest that video game experience is changing generations' attitudes towards work and learning (Beck & Wade, 2004). Video games have, indeed, been around in various forms since the middle of the twentieth century. Originally, video games were thought to be played mostly by teen males. As technology changes, however, this perception changes too. People of all ages are playing games; in fact, the average male gamer is 33 years old, and the average female gamer 37 years (ESA, 2018). There are more than 2 billion video game players worldwide (Egenfeldt-Nielsen, Smith, Tosca, & Egenfeldt-Nielsen, 2015). The average young person accumulates 10,000 hours of gaming before turning 21 (McGonigal, 2011). Seventy-five per cent of the most frequent gamers believe playing video games provides mental stimulation or education. As for parents, they see digital media as providing a variety of educational benefits and consider them a positive part of their children's lives (Common Sense Media & the Joan Ganz Cooney Center, 2008). Moreover, one study found that 61% per cent of the CEOs, CFOs and other senior executives surveyed take daily game breaks at work (McGonigal, 2011).

Despite video games' massive popularity, until relatively recently only limited attention was devoted to understanding their appeal and impact from a range of perspectives. The popular press has busily painted a picture of video games as potentially harmful. As a result, until the late 1990s, most public concern about video games focused on their assumed negative behavioural consequences for minors and, to a much lesser extent, on gender bias (Everett & Watkins, 2008).

However, with the increasing variety of video games and the diversification of the player base, researchers have begun to look at how video-game playing affects the way people think and collaborate. Nowadays video games are viewed as "sophisticated tools inhabiting and disseminating racial, gender and cultural meaning", "video games more so than schools, religion, or other forms of popular culture are teaching Americans about race, gender, sexuality, class, and national identity" (Leonard, 2003). In the same vein, Greenfield (2004) added that video games' scope of influence had been exceeding that of other forms of media, and it is becoming increasingly difficult to tell which source the younger generations are learning more from, whether textbooks or video games.

In a study done by Bourgonjon et al. (2016), gamers participating in an online forum listed the positive impact of video games on how they learned and what they chose to learn. Video games can improve the cognition of players and increase their ability to imagine. Also, playing games allows gamers to gain a different perspective on things. Gamers themselves recognise that games have an impact on the way they think, the way they see the world, the books they read (Bourgonjon et al., 2016).

Massive reach and impressive commercial success of video games have caught the attention of training professionals and educators. A current professional interest in digital games is based on the idea that games can be effective tools for enhancing learning and understanding of complex subject matter (Garris, Ahlers, & Driskell, 2002). Video game use in education has focused on their inherent potential for producing learning (Gee 2003). This idea is based on facts. Firstly, there has been a major shift from the teacher-centred "*learning by listening*" approach to a learner-centred one where students take a more active role and learn by doing. Secondly, the development of new interactive technologies makes it possible to actively involve students in problem-solving. And finally, video games have a tremendous capacity to capture students' attention and engage them in the curricular content (Garris et al., 2002). Furthermore, video games offer designed experience, which participants learn through the grammar of doing and being (Squire, 2006). Players can lead civilisations, fly aircraft, lead squadrons of urban warriors. It should come as no surprise that computer games are being increasingly incorporated into learning environments, e.g. classroom education, science and technology, government,

financial services, healthcare, hospitality and catering, telecommunications, corporate and military training, etc.

Players and educators alike have recognised the role of video games as a tool for encouraging the transfer of learning (Greenfield, 2004; Gee, 2003; Dickerman, Christensen, & Kerl-McClain, 2008). Moreover, games have the potential to improve the learning outcomes of students (Shapiro, 2014), to teach the paramount skills required in the twenty-first century, such as systems thinking, strategic problem solving, and interpretative analysis (Qian & Clark, 2016; Margarida Romero & Gebera, 2012; Margarida Romero, Usart, & Ott, 2015; Torres, 2009), to contribute to business education (Fu, Hainey, & Baxter, 2016), to influence the moral and mental development of youth (Jin, Ma, Hua, & Coward, 2017), and to empower people (Gee, 2005). Similarly, Kondrat (2015) writes, "Video games train for a logical way of thinking, teach cooperation with other players, create and improve their imagination".

As Mayo (2009) rightfully points out, "complex tasks are presented first as a small core experience that is practised multiple times before being progressively extended into a longer, more complex sequence". This results in the gradual building of skills on top of previously learned skills. So, "What do players take away from video games in terms of getting influenced on an individual level?" and "Do players learn from video games, and if so, what do they learn?" are the main questions in the modern discourse on video games.

1.1. Digitally born generation

To increase the scientific relevance of the study, digitally born generation, and where possible Generation Z is in focus of this thesis. Digital natives are lifelong users of modern communication and media technologies, and Generation Z specifically is known for the desire to make an impact on society.

Generation Z, or the Net Generation, is the term used to designate the group of people born between the early 1990s and early 2000s (McCrindle, 2006). Generation Z is connected and networked 24/7 and makes lifelong use of modern communications and media technologies, thereby earning itself the nickname *¨digital natives¨* (Prensky, 2001). Seventy-three per cent of people known as Generation Z have video game consoles, seven per cent more than the next most likely gamers, millennials (Molla, 2017). According to the Pew Research Centre (2015), 81% of Gen Zers own or have access to game consoles such as PlayStation, Xbox or Wii, with 91% of boys owning game consoles and 70% of girls owning or enjoying access to consoles (Lenhart, 2015). According to the quantitative research conducted by market research firm Lab42, 90% of Gen Zers play some game (mobile/console/PC), with most claiming to play

console games (37%) vs mobile phone games (31%), once a day or more (Pirc, 2017). Other research of 3,095 Spanish adolescents, aged 12 to 18 indicated that boys use more videogames and computers for playing while girls tend to use mobile phones to communicate with others (Peiró-Velert et al., 2014).

Gen Z is the first group of people to grow up with the Internet. Gen Zers are tech savvy and technology-dependent. They feel comfortable using five screens at a time—smartphone, TV, laptop, desktop, and tablet— and are connected 10+ hours a day (Johnston, 2018). By 2020, Generation Z will account for 40 per cent of all consumers in the U.S. alone. This makes them the principal subject of marketing research (Glum, 2015). Furthermore, one of this generation's characteristics is that they are eager to learn and plan to make an impact on society (Johnston, 2018). As a result, studies aiming to understand the different attributes of Gen Zers have flourished during recent years.

Literacy researcher James Gee advocates using video games to teach kids to "collaborate to solve hard problems". As a result, digital natives or Gen Zers may feel comfortable with new technology and apps for their formal and informal education. This leads us to the point that assessing the video game tastes and desires of the Gen Z gamer population would yield results containing valuable information for game designers who want to tailor gameplay to a particular audience. It could also be relevant as a prediction model for suggesting to players what games they would enjoy playing, or for recommending certain games to new players and marking their first experiences with, for example, pleasant educational games.

With this study I set out to learn more about what Gen Z gamers find attractive in AAA entertainment titles, to examine the different gaming patterns related to sex, and to hear gamers self-reflect on why they play, what they learn while playing, if they become more culturally literate and what their expectations of enjoyable video games are. This study attempts to provide game developers targeting Generation Z as their primary users, on the one hand, and developers of serious games aimed at Gen Zers, on the other, with valuable information about genres, features, characters, the most attractive themes, the amount of gameplay needed, the platforms to deploy games on, the difficulty of the levels, etc.

1.2 Research questions and objectives

Globalisation has brought about change not only in the economic, social and technological order but also in people's mentality and the ways they interact with the world around them. There is a consensus that in our increasingly interconnected world, one of the essential tasks of educators and institutions at all levels is to develop, promote and enhance

cultural literacy. Despite the massive popularity of video games, until very recently, little effort has been devoted to understanding how they affect the way people see the world and collaborate with each other. There has also been little research on how video games leverage and support intercultural education. The combination of these two factors has led to the present thesis' over-arching research questions:

Can video games (both serious games and AAA[1] entertainment titles) be dynamic and interactive learning tools for the acquisition of cultural literacy for a digitally born generation?

Can video games teach digital natives intercultural skills necessary for successfully operating in the twenty-first century and making positive social change, besides providing entertainment?

Can video games be a useful and practical addition to the curriculum of intercultural education, and support and enhance the closely related fields of diversity and inclusive education?

With these research questions in mind, the objectives of the study are:

1. To clarify some of the conceptual ideas surrounding cultural literacy and present the updated elements of cultural literacy model relevant to the 2020s;
2. To investigate what evidence exists that video games help digital natives to acquire cultural literacy and intercultural skills, decrease stereotypical thinking, foster empathy towards culturally "*other*", and make them more culturally sensitive;
3. To gain insights into the gaming preferences and learning outcomes of digital natives to allow the design of more appealing serious and educational games that deals with current global and social issues that would help to create a positive social change in the long run;
4. To offer a conceptual design of a serious educational game that could serve as a supplementary digital game-based learning tool in intercultural, diversity and inclusive education.

1.3. Methodology

To explore holistically the research questions in some details, a mixed methods research design was employed in this study, and included the use of theoretical methods and empirical methods, facilitating interdisciplinary scientific research.

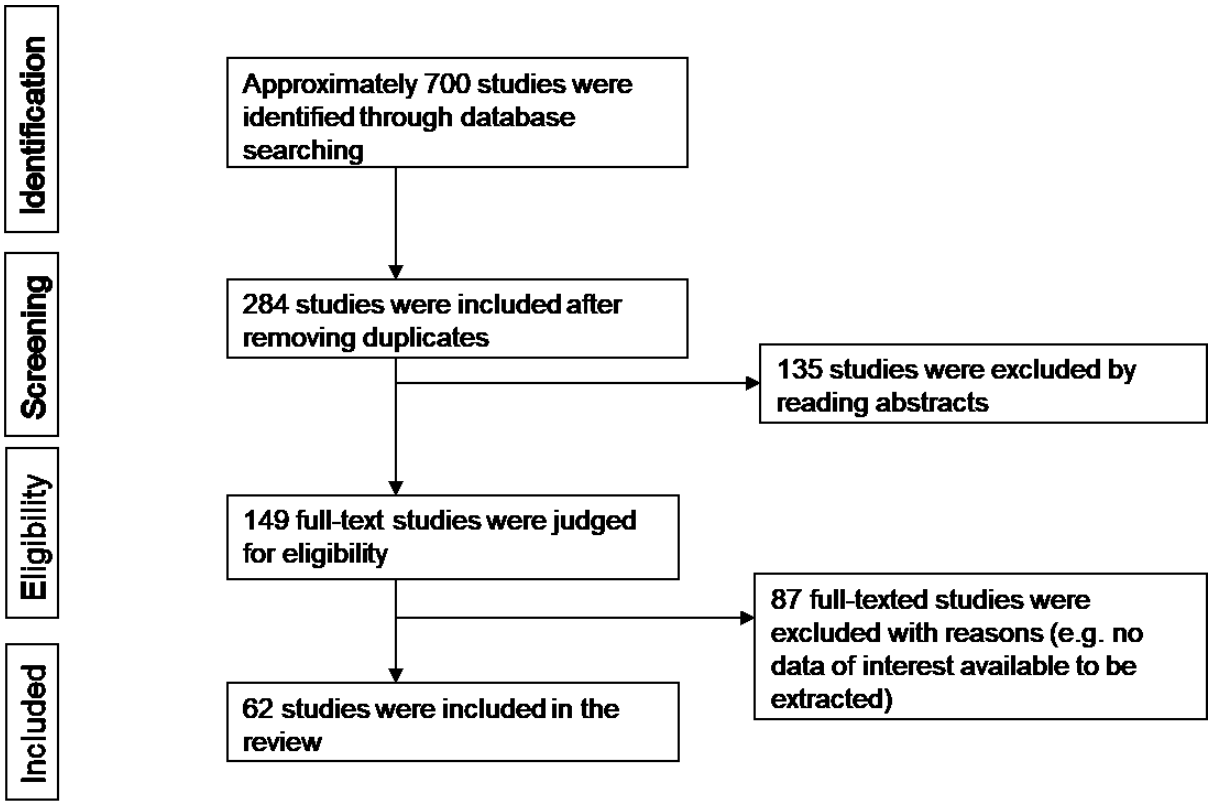
1 AAA (pronounced "*triple-A*") describes video games produced and distributed by mid-sized or major publishers with high development and marketing budgets

A historical literature review was employed to examine the evolution of cultural literacy concept throughout a period of time, starting with the first time an issue, most important and critical aspects of concept, how phenomena emerged in the literature and then tracing its evolution until now. The purpose was to place cultural literacy in a historical context, to have a look at the current trends, to offer an updated model of cultural literacy relevant to the modern world and to identify the likely directions for future development of the construct taking into consideration modern megatrends such as globalization, migration, fast-moving development and advancement of new technologies, artificial intelligence (AI).

A systematic literature review (SLR) was conducted to systemize the impact and outcomes of digital games from an intercultural perspective. This systematic review followed a clearly defined protocol. Studies in the large accessible databases Web of Knowledge, ProQuest, Scopus, Science Direct, Google Scholar and PoliBuscador (PoliBuscador is the bibliographic search engine of the Polytechnical University of Valencia) covering subjects related with education, social studies, cultural studies, and information technology were thoroughly reviewed. The 59 articles, one thesis and two book chapters that met the inclusion criteria were analysed and coded based on some elements of the multidimensional approach developed by Connolly, Boyle, Macarthur, Hainey, & Boyle (2012).

The search strategy was to enter the following terms in the search engines to look for possible outcomes and impacts: "*video games*", "*serious game*", "*communication*", "*representation*", "*minority groups*", "*stereotype*", "*avatar*" and "*culture*". Then I combined these terms with the names of the intercultural skills: "*awareness*", "*identity*", "*communication*" and "*intercultural*". Finally, I used terms for outcomes, such as "*skill*", "*competency*", "*impact*", "*attitude*", "*effect*" and "*outcome*". The Boolean operators AND, OR were used to broaden the search. Dissertations and book chapters were included in our search. To select appropriate papers for inclusion in the present review, I defined the following criteria: (a) articles should have publication dates between 2001 and May 2018; (b) articles should include evidence relating to the impacts and outcomes of game playing; (c) articles should contain data that can be generalized; (d) paper should contain positive or negative conclusions related with (inter)cultural literacy acquisition and intercultural skills learning, decreasing or increasing stereotypical thinking, and fostering empathy. Diagram 1 shows the identification, selection and appraising of the studies to be included in the review.

Diagram 1 Flow diagram of the articles included in the systematic literature review (SLR)



Stephan & Stephan's (2000) integrated threat theory, or intergroup threat theory (ITT), explaining the feelings of threat toward culturally "other" and Green & Brock's (2000) Transportation Theory were used as a basis to articulate hypotheses to explore objective 2. Mixed methods (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2010) were used to explore hypothesises in some detail. The participants in quantitative Study 1 (N=98) played the games *Survival, Paper, Please* and *Against All Odds*. The following instruments were used to collect quantitative data from the students sampled: (a) a pre-test questionnaire and (b) a post-test questionnaire.

Qualitative study 2 (N=78) employed a narrative research methodology (Chase, 2011; Riessman, 2008; Taylor & Francis, 2013) to collect the experiences of the participants engaged in gameplay. "Given that there are potentially no bounds to the human imagination and our natural propensity for telling stories, narrative inquiry as a research methodology keeps on evolving and expanding outwards in every direction" (Taylor & Francis, 2013). Narrative research makes it possible to explore and then present the meanings that participants derive from their experiences (Riessman, 2008; Taylor & Francis, 2013). Furthermore, "narrative research offers the possibility of exploring nuances and interrelationships among aspects of experience that the reader might better understand other related situations" (Josselson, 2006). Participants played the video game *Against All Odds* (of special research interest was the third part of the game, "A New Life").

The participants were offered to keep a reflective learning journal with prompts to assist them during or after gameplay in their reflections about their engagement, enjoyment, difficulties, reflections on their personal reactions, on the events, learning outcomes and links to the real world.

Both studies were made up of students enrolled in the first year at the Faculty of Transport and Information Technologies at National Transport University in Ukraine. Students were invited to participate in the study through announcements made during lectures. Potential participants were not given any advance indication of what the study might be intended to measure; they were simply told that the study was about video games and education. Students volunteered to participate in the study in exchange for additional course credits. To avoid any communication barriers, the students surveyed could choose to read and answer the questions in either English or Ukrainian.

The questionnaire consisting of 23 items was developed by the author to explore objective 3 in some details. This questionnaire can be classified as both quantitative and qualitative methods because of the nature of questions. 15 out of 23 questions of the questionnaire were open-ended questions where participants were asked to reflect on their experiences (in the broad sense of the word) with video games. Answers obtained through closed-ended questions with multiple choice answer options were analysed using quantitative methods, and the results were presented as percentages, pie-charts and bar-charts. Answers obtained to open-ended questionnaire questions were analysed using qualitative methods with critical analyses and produced unexpected results, which can make this research more original and valuable.

To obtain representative samples, participants were recruited online by sending out invitations via social media (Twitter of Valencia Interactive (Local Game Industry community and the official Valencia Unity User Group (VUUG)) and through the mailing lists of organisations at the UPV (Spain) and NTU (Ukraine)[2].

Sampling

As part of the thesis research, the author sought to utilise sample groups. The selection of appropriate sample groups was influenced by several factors, such as research time scales, access to the participants and the number of researchers available to conduct the research (a sole researcher) (Cohen, Manion & Morrison 2008, Dawson 2009).

Responsibilities to research participants

[2] Universitat Politècnica de València (UPV); National Transport University (NTU).

Participants of the studies were treated by those conducting research with the following ethical standards:

- voluntary informed consent;
- right to withdraw at any stage;
- privacy (data collected during the research process was treated with confidentiality in order to protect the privacy of the research participants).

It is important to seek methods, strategies and exemplars conducive to designing optimal digital game-based learning environments. Thus, when designing *Chuzme,* several models were reviewed to identify the one best suited for this project. After careful consideration, to support *Chuzme's* game design phase, the ATMSG model was chosen for its complex and dynamic view on serious games, while the overall design process was guided by the serious instructional design process, developed by Becker & Parker (2011) as a combination of simulation design (SD), game design (GD) and instructional design (ID).

The text and the references of the present thesis were written following mainly APA citations format.

1.4 Structure

Especially during the last five years, a number of studies have emerged that investigate the potential and document the benefits as tools for learning of both video games in general and video games specifically designed for educational purposes. There is a growing body of research on the use of video games for educational outcomes, and this thesis aims to contribute by examining the acquisition of the twenty-first-century skill of cultural literacy through video game environments.

The thesis is broken down into the following parts and chapters:

The first part includes four chapters and deals with the establishment, development and current challenges and trends in the video game research area. The main aim of this part is to place the present research within the current trend of investigation, namely, video games as a medium of twenty-first skills development.

Just after the Introduction Chapter, Chapter Two describes cultural literacy as a real-world non-semantic phenomenon and concerns itself with real-world trends regarding interest in, demand for, and the effects of cultural literacy. This chapter reviews the literature on cultural literacy, clarifies some of the conceptual ideas surrounding the construct, presents the updated

elements relevant to the 2020s, and provides a critical assessment of the concept's development in the twentieth and twenty-first centuries. An analysis and summary will also be made of common trends for a new set of skills and competencies necessary for success in the twenty-first century as outlined by policy-making institutions like UNESCO, education institutions like the British Council, MNCs like IBM and Google, and influencer organisations like LinkedIn and the World Economic Forum.

Chapter Three presents the modern research discourse on video games, explaining how they are no longer being demonised (for causing violence, aggression, and addiction) but rather investigated for their positive effects. The chapter focuses on several domains: the cognitive, motivational, emotional, and social aspects of video games, and twenty-first century skills learning. Special attention is devoted to the shift in research from the representation of gender and race to the effect of this representation on the minds of players.

Chapter Four examines the recent literature regarding the impact and outcomes of video games from the intercultural, diversity and inclusion points of view. Sixty-two studies are identified whose aim is to analyse outcomes for behavioural change, content understanding, knowledge acquisition, and perception change.

Then, in Part II, some experiments have been conducted and their results and discussions are presented in order to substantiate the theoretical findings from Part I. The experiments looked at different aspects of where digital games could enhance cultural literacy acquisition, i.e. self-awareness, cultural sensitivity, perception change, cultural knowledge gain, motivation to become a change agent. The second part of the thesis has two chapters. The studies presented in Chapter Five explored the effect of the entertainment and serious video games *Papers, Please, Survival* and *Against All Odds* on the acquisition of cultural knowledge about migrants and refugees, on increasing empathy and decreasing denial towards the culturally "other", and on raising prosocial behaviour (willingness to take action in real life).

Both qualitative and quantitative methods were used to explore this issue in some detail. The variables measured were Knowledge, Attitude Denial, Attitude Empathy, Enjoyment, and Willingness to Help. Study 1: 98 participants took part in a quantitative study with a quasi-experimental design, with a pre- and post-test model. Study 2: 78 participants took part in a qualitative study using the narrative research method (Riessman, 2008) to examine the experiential-participatory-learning experience. The students played the educational video game *Against All Odds* (the special research interest is the third part of the game, "A New Life") and filled in the reflective learning journal to share information on their engagement, enjoyment, difficulties, reflections on their personal reactions, and learning outcomes. Creating social

change adds to the social relevance of this study because its results will provide a better understanding of how to make people more aware and empathetic of the migrant situation.

Chapter Six presents the results of a broad, mostly open-ended-questions survey (self-reflection and self-reporting) among Spanish and Ukrainian gamers and casual players (N = 427). This study revealed the video game genres, characters, and in-game elements and features of big entertainment titles that Gen Zers find attractive—both in general and by sex—and those they miss and are looking for in future games. Understanding Gen Z players' preferences allow game designers and especially designers of educational and serious games dealing with current global and social issues to make inferences about the game features Gen Zers prefer and to better personalise gameplay.

The last part of the thesis includes two chapters, Chapter Seven and Chapter Eight. Chapter Seven, based on the finding from chapters Four, Five and Six presents the conceptual design of an educational video game called *Chuzme* that is focused on raising cultural self-awareness, acknowledging cultural bias, and generating positive attitudes towards migrants, refugees and expatriates amongst its players. This chapter details the decisions taken in the *Chuzme* design process, highlighting their relationship with the methodology chosen. In so doing, the chapter addresses the question of how serious games (SG) for augmented-reality can foster and support the active learning of a set of twenty-first-century skills composed of communication, collaboration, self-reflection, social and intercultural skills.

The last chapter sums up the thesis's main findings, outlines its main contribution to the knowledge, and offers some interesting areas for future investigation.

1.5. My thesis related work

The publications, presentations and workshops ensued from this research are listed below. Publications have been previously published in books, journals and conference proceedings, providing a critical discussion of the topics from the different points of view.

Publications

Shliakhovchuk, E. (2019). After cultural literacy: new models of intercultural competency for life and work in a VUCA world, Educational Review, DOI: 10.1080/00131911.2019.1566211

Shliakhovchuk, E. (2018). Using Video Games in Intercultural, Diversity and Inclusive Education. Conference Proceedings of 11th annual International Conference of Education, Research and Innovation. Seville, Spain. 12-14, November 2018, pp.10326-10336

Shliakhovchuk, E. (2018). Communication Across Borders and Cultures: Impact of Race and Gender Stereotypes in Video Games on Players. Conference Proceedings of the 4th Global Pioneerism, Innovation and Excellence Conference. Dubai, United Arab Emirates. 15-16 October 2018. Volume: 1, pp.12-24

Shliakhovchuk, E. (2018). Learning About Cultural Differences Through Video Games. In book: SIETAR Europa Intercultural Training Tool Kit. Editors: Elisabeth Hansen, Ann-Kristin Torkler, Barbara Covarrubias Venegas Publisher: SIETAR Europa

Shliakhovchuk, E. (2019). Playfulness and Seriousness: The Power of Video Games to Teach and Enhance Cultural Intelligence (CQ). Chapter 1 In Challenges and Opportunities in Global Approaches to Education. Editors: Theresa D. Neimann, Uta Stelson. IGI Global, DOI: 10.4018/978-1-5225-9775-9

Workshops and presentations delivered based on the results of the thesis

Joint Spring School 2019 on "New and Old Data: Cutting-Edge Approaches to Quantitative Social Research" (ECSR, Collegio Carlo Alberto and NASP Joint Spring School 2019), 25-26, March 2019. Turin: Italy. Presentation: "Empathy Video Games": Video Games as Awareness Raisers, Attitude Changers and Agents of Social Change.

2nd International Conference European Integration Processes in 21st Century: Key Trends, Main Challenges and New Perspectives. 28 March 2018. Kyiv: Ukraine. Presentation: The crisis of multiculturalism in the EU. Cultivating Virtual Stereotypes. The Impact of Video Game Environments on Racial/Ethnic Stereotypes.

11th annual International Conference of Education, Research and Innovation. 12-14 November 2018. Seville: Spain. Presentation: Using Video Games in Intercultural, Diversity and Inclusive Education.

The Fourth Pioneerism, Innovation and Excellence Conference. 15 – 16 October 2018. Dubai: United Arab Emirates. Presentation: Communication Across Borders and Cultures: Impact of Race and Gender Stereotypes in Video Games on Players.

2019 SIETAR Europa Congress "Building Dialogues on Diversity - Towards a Future of Hope" 30th, 31st of June, 1stf June 2019. Leuven: Belgium. Workshop: Video Games in Intercultural, Diversity and Inclusive Education.

Taller de herramientas para la formación intercultural, Sietar Spain Society. Valencia, 29th of April 2019. Participated as a co-host in a full-day program of the exchange of tools for intercultural training in different contexts (business, university, social environment) delivered a workshop on using serious video games in intercultural education promoted.

Chapter Two: Cultural literacy in a volatility, uncertainty, complexity and ambiguity world[3]

Culture makes people understand each other better… At this moment, I don't see too much hope in political dialogue. But I see a lot of hope in the cultural dialogue.

Paulo Coelho

Globalisation has given rise to a new discourse that calls for updated education solutions for the 2020s. Even a brief analysis of global tendencies —as increased international interconnectedness, the rapid rate of urbanisation, technological advances, increased migration, and the devastation of natural resources—makes it evident that labour markets are increasingly demanding workers with advanced skills. Lifelong and life-wide learning necessity comes from the current socio-economic transformations. A key driver of modern education systems is preparing citizens for employment in today's VUCA (volatility, uncertainty, complexity and ambiguity) world.

Historically, literacy as an ontological phenomenon can be traced back hundreds of years. It is found in Mesopotamia, the Sumerian and Babylonian cultures, the Chinese Confucian movement, religious brotherhoods in ancient Greece, priest guilds in ancient India, Jewish communities, Islamic civilisation, and Christian Europe, to mention only some. "In earliest times, literacy was highly restricted and a relatively unprestigious craft; it carried little of the association with wealth, power, status and knowledge that it later acquired. It was a tool, useful firstly to the needs of state and bureaucracy, church and trade" (Graff, 1987, quoted in UNESCO, 2006). For centuries, literacy was a privilege possessed only by a few and just for specific purposes like record keeping, legal disputes, religious teaching, and trade

Literacy has been defined differently throughout history as a result of changes in societal demands. Traditionally, literacy has been considered the "three Rs": Reading, Writing and Arithmetic. In the eighteenth and nineteenth centuries, industrialised European countries made some progress in reducing illiteracy and improving the general literacy level of the population, until the middle of the twentieth century, when literacy levels rose dramatically. According to

3 This chapter is published as Shliakhovchuk, E. (2019): After cultural literacy: new models of intercultural competency for life and work in a VUCA world, Educational Review, DOI: 10.1080/00131911.2019.1566211

data published by UNESCO (2017), since 1950 global adult literacy rate has increased by an average of five per cent per decade, from 55.7 per cent in 1950 to 86.2 per cent in 2015.

In the 1970s, definitions of literacy began to broaden. The educator Paulo Freire (1976) said,

> To acquire literacy is more than to psychologically and mechanically dominate reading and writing techniques. It is to dominate those techniques in terms of consciousness; to understand what one reads and to write what one understands: it is to communicate graphically. Acquiring literacy does not involve memorising sentences, words or syllables – lifeless objects unconnected to an existential universe – but rather an attitude of creation and re-creation, a self-transformation producing a stance of intervention in one's context (p. 36).

In the 1980s and 1990s, reflecting the challenges in social and economic life, the emergence of the economies of knowledge, and the impact of new technology and information media, "literacy" became a metaphor for many kinds of skills. Emphasis was placed on skills and practices that are relevant to the changing dynamics of modern life. Thus, literacy empowers one to develop one's knowledge and potential, to achieve one's goals, and to participate in society at large. As a result, the field of 'Literacy Studies' was born.

The late twentieth and early twenty-first centuries brought a fundamental change in the development of technologies such as the internet, gaming software, virtual and augmented reality, and telecommunication technologies. Owing to this, the emerging field of New Literacies Studies started a new era in the study of literacy. Whilst the definition of new literacy is fluid and evolving, it is commonly understood that it "identifies questions, locates information, evaluates the information, synthesizes information to answer questions, and communicates the answers to others" (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1572, quoted in Hsu & Wang, 2010).

As a consequence, it is claimed that the spread of literacy in the world and the inclusion of the ability to create, consume and communicate different materials associated with various contexts in the modern understanding of literacy, inclines us to be cooperative and more tolerant to a different other. Harvard psychologist Pinker (2011) links widespread literacy to the reduction in people's ¨*taste for cruelty*¨ and the widening of the circle of tolerance towards others, thus empowering ¨*the empathy escalator*¨.

2.1. The concept of Cultural literacy in the XX and XXI centuries

2.2.1. Cultural literacy in the twentieth century

People meet one another having already been culturally programmed. Culture defines acceptable and unacceptable behaviours, biases and prejudices, many of them unchecked and unrealised. Therefore, to meet the unique demands of global interconnectedness, we need to learn to be culturally literate. In the words of Hall (1977), "... a massive cultural literacy movement started".

According to Oxford Dictionaries Online, the term cultural literacy has its origins in the 1940s and is "the ability to analyse and understand a particular society or culture; familiarity with the customs and characteristics of a culture".

In his Cultural Literacy Laboratory, Wilson (1974) defined cultural literacy "as insight into one's own culture, and it includes some understanding of one's frustration and tolerance levels, the ability to work effectively with people who are culturally different and to demonstrate the skills this requires". Possessing the skills of transcultural communication and awareness of one's ethnicity is what cultural literacy is all about (Wilson, 1974).

In 1987, the educator and academic literary critic E.D. Hirsh published his influential book "Cultural Literacy: What every American needs to know". Within this he developed his concept of cultural literacy that refers to the ability to engage fully in any given culture by understanding that culture's signs, symbols, language, stories, idioms, idiosyncrasies, references to past events, jokes, names, places, etc. (Hirsch, Kett, & Trefil, 1988;2002). Hirsh's definition of cultural literacy is culture specific. You are culturally literate when you know what an average member of the same culture is supposed to know. Hirsch et al. (1988;2002) compiled 23 sections covering, among others, the Bible, Business, Mathematics, Life Science, Earth Sciences, Technology, World History, and a list of dates which he "intended to illustrate the character and range of the knowledge literate Americans tend to share".

Owing to this, back in the twentieth century, cultural literacy was used to define a monoculture to locate the parameters of nationalism. This had the effect of causing cultural literacy to be used to indicate the parameters of national literacy:

N = CL (n1): nationalism = cultural literacy (Johnson, 2014).

Hirsch's work triggered a broad scholarly debate criticising the notion of core knowledge and the assumption that everyone has access to it (Johnson, 2014). For decades, a wide range of

scholars and educators tried to redefine the concept of cultural literacy adding new meaning to the idea (Broudy, 1990; Christenbury, 1989; Cook, 2009; Mullican, 1991; Schweizer, 2009). Most agreed that there are far too many different cultures for one to be literate in all of them. In other words, people are culturally fluent in their native culture, as they have been learning their cultures unstated and often unrealised from childhood. But when one enters a new culture or interacts with members of that new culture, one needs to develop new cultural literacy. In addition to this, Ahmadi & Helms (1994) made the first mention of the use of cultural literacy in the business curriculum.

2.1.2. Cultural literacy in the twenty-first century

Information and communication technologies create opportunities for connecting and collaborating with people of different cultural background and languages. Owing to this, many disciplines —from history to science— have revisited the importance and role of cultural literacy in modern society, broadening its meaning. Furthermore, cultural literacy has begun to be seen as a *¨modus operandi¨ (*Ochoa, McDonald, & Monk, 2016) that "highlights communication, comparison and critique, bringing ideas together in an interdisciplinary and international collaboration" (Segal, Kancewicz-Hoffman, Landfester, 2013). Furthermore, Cultural Literacy is claimed to have the same implications as Opportunity Cost in economics and "can be applied and verified through everyday experience, in any and every context" (Ochoa et al., 2016). In agreement with this, Desmond, K. J., Stahl, S. A., & Graham (2011) give their definition of cultural literacy as "the knowledge of history, contributions, and perspectives of different cultural groups, including one's own group, necessary for an understanding of reading, writing, and other media". To build communication, acceptance, and understanding, one needs to possess and to use a broad range of general knowledge. Cultural literacy requires interaction with and reflection on that culture (Desmond et al., 2011).

In the same way, several reputable institutions articulated their understanding of Cultural Literacy. The European Science Foundation, for example, acknowledges the ability of cultural literacy "to recognise, reflect on, use and potentially modify the many interacting cultural artefacts, including texts and other media, which shape our cultural existence" (Segal et al., 2013). In agreement with this, the Cultural Literacy in Europe forum[4], working in the European context of cultural literacy, concludes that cultural literacy is an innovative and creative practice

4 http://cleurope.eu/about/

that employs "communication, comparison and critique on a scale beyond that of one language or one nation-state, and avoiding abstraction".

Similarly, Rosen (2000) argues that management and technology alone will not give economies supremacy, but populations will also need to be culturally literate, "Culture is no longer an obstacle to be overcome. Rather, it is a critical lever for competitive advantage". He postulates that tomorrow's leaders will strive to be culturally wise by appreciating similarities and differences between peoples, companies, and countries; and they will know that superficial understanding negatively impacts businesses (Rosen, 2000). His formula for success in the twenty-first century is: personal literacy + social literacy + business literacy + cultural literacy = global literacy = world-class excellence (Rosen, 2000).

The importance of cultural literacy, both to individuals and their societies, was theorised by various authors (Anning, 2010; Flavell, Thackrah, & Hoffman, 2013; Dudeney, Hockly & Pegrum, 2013). At the individual level, researchers say cultural literacy can improve one's communication with people from diverse backgrounds. Cultural literacy contributes to developing communication and self-reflection skills by building up:

- cultural skills in general, by the exploration of different cultural perspectives and practices;
- communication, through self-reflection on communication style and behaviour, and by being open to it;
- self-reflection on cultural and racial identity which shapes one's cultural perspective as one of many;
- critical thinking that compares with and contrasts against a variety of cultures, and evaluates their relative strengths and limitations (Flavell et al., 2013).

In addition to this, cultural literacy values diversity and decreases prejudice and inequality based on culture, thus contributing positively to the society one lives in (Anning, 2010).

Moreover, cultural literacy is nowadays recognised as a crucial element of digital literacy. For Belshaw (2012), the cultural element of digital literacies is

> the need to understand the various digital contexts an individual may experience... Digital literacies are not solely about technical proficiency, but about the issues, norms and habits of mind surrounding technologies used for a particular purpose. The Cultural element of digital literacies is all about seeking ways to give people additional 'lenses' through which to see the world (p. 207).

This points to the conclusion that globalisation has brought a change not only in the economic and technological order but also in the mentalities and the ways people need to conceive the world. There is general agreement that living and working in culturally diverse settings presents educators and institutions at all levels with the essential task of promoting and enhancing cultural literacy.

2.1.3 Intercultural and transnational literacies, cultural intelligence and global dexterity

With the growing interest in new literacies and following the acknowledgement of cultural literacy's importance, the terms intercultural literacy (Heyward, 2004; Honna, 2008; Dudeney, Hockly, & Pegrum, 2013), transnational literacy (Spivak, 1999), cultural intelligence (CQ) (Earley & Ang, 2003; Livermore, 2009), and global dexterity (Molinsky, 2013) have come into use. In addition to this, Cultural competence 2.0 is looking for approaches, concepts and frameworks to offer to the intercultural field.

According to Heyward (2004), intercultural literacy is "the understandings, competencies, attitudes, language proficiencies, participation and identities which enable effective participation in a cross-cultural setting" (Heyward, 2004). This author states that an interculturally literate person has the background necessary for comprehending the second culture, 'to interpret its symbols and negotiate its meanings in a practical day-to-day context'. He points out, however, that intercultural literacy can emerge in societies that value cooperation over competition. Zhang (2012), in the context of computer-based learning, adds that the concept of intercultural literacy is a significant component in measuring various intercultural communication activities due to a pluralist and modular approach.

Similarly, Honna (2008) interprets intercultural literacy as "an attitude, preparedness, and competence to transmit one's message and understand others' appropriately in a cross-cultural encounter". She expresses the idea that intercultural literacy is the fourth kind of basic literacy, next to 3Rs literacy, media literacy, and information literacy. Moreover, she recognises intercultural literacy's ability to reconcile cross-cultural differences in a mutually beneficial manner (Honna, 2008).

In a later definition by Dudeney et al. (2013), intercultural literacy is placed within a broader framework of digital literacies in the "Focus on connections" category (cultural and intercultural literacy: working with others). Dudeney et al. (2013) define it as "the ability to interpret documents and artefacts from a range of cultural contexts, as well as to effectively

communicate messages and interact constructively with interlocutors across different cultural contexts". Linking intercultural literacy with digital illiteracies reminds us that its importance is growing and that its development can be supported within digital networks (Dudeney et al., 2013).

Another captivating concept is transnational literacy, elaborated by Spivak (1999), who suggested a new mode of the critical and pedagogical methodology through which people grasp globalisation- and transnationalism-related phenomena. "Trans" in transnational literacy does not signify "anti"-national or "beyond" the national, it rather focuses on the opposing dynamic and dialectical relationship between the national and the global, and 'a productive acknowledgement of complicity'" (Spivak, 1999).

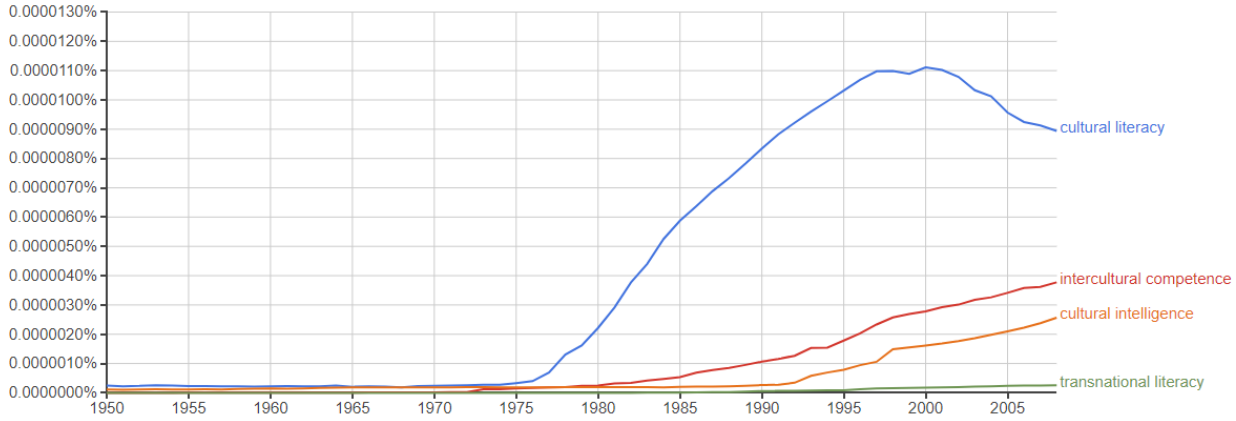
A concept that attained wide recognition in the business world is cultural intelligence (CQ), coined by Earley & Ang (2003), who examined CQ in the facets of cognition (the ability to develop and recognize cultural patterns), motivation (the need and the skill to engage others), and behaviour in agreement with cognition and motivation. Later, Livermore (2009) developed CQ as a four-step construct measurable on the scale model for becoming effective at managing across cultures.

The most recently developed concept is that of global dexterity, which is the capacity to adapt one's behaviour to different cultures, to fit into a new culture without giving up one's own personality (Molinsky, 2013).

As is clear by now, increased attention to cultural abilities that help to function effectively across different cultures at the beginning of the twenty-first century has brought various concepts with new modern-sounding names. Some constructs overlap; thus, the term "cultural literacy" is interchangeable with other terms, such as intercultural competence, intercultural literacy, CQ/cultural intelligence, or cultural mindfulness[5]. This chapter concerns itself with a real-world non-semantic phenomenon, the real-world trends surrounding the interest, demand and effects of cultural literacy. Figure 1 shows interest in the terms over time. The term "cultural literacy" received the highest degree of attention after Hirsh (1988) published his first book, but at the beginning of the twentieth-century new terms started to gain attention.

5 for more see Kirmayer, L. J. (2015). Mindfulness in cultural context. Transcultural Psychiatry, 52(4), 447–469. https://doi.org/10.1177/1363461515598949

Figure 1 The trends of the terms in books over time[6]. Source: www.culturomics.com



2.1.4 The attributes of cultural literacy

A wide range of researchers (Rosen, 2000; Muller, 2006; Polistina, 2009; Anning, 2010; Henson, 2016) has proven the thesis about the essential role of equipping people with the ability to deal with cultural differences and cultural change in an increasingly borderless world. Cultural literacy is developed through the identification of the intra-relationships between the self and the *"generalised other",* through the phenomenological self and the phenomenological field (Wilson, 1974). *"When in Rome, do as the Romans do"* is a well-known statement, but to be successful in the modern world, people need to ask, 'Why do Romans behave in this way? How do I differ from them?' (García Ochoa et al., 2016).

In agreement with the above, Rosen (2000) states that with cultural literacy, one can comprehend and leverage differences, enabling one to perform the key roles of:

1. The proud ancestor who values one's cultural heritage, its shortcomings, its strengths;
2. The inquisitive internationalist who looks beyond one's own culture for business possibilities;
3. The respectful moderniser who retains the best of one's culture and uses the knowledge and the resources of others;
4. The cultural bridger who forms alliances and coalitions across cultures;
5. The global capitalist who brings global resources to local problems and local resources to global opportunities (Rosen, 2000).

---

6 www.culturomics.org is a tool that investigates cultural trends quantitatively using digitized texts containing about 4% of all books ever printed. The most accurate data is shown between 1800 and 2000. The terms included in the search show the trends till 2008. Terms that appeared after 2008 are not displayed.

Similarly, Muller (2006), discussing the contribution of cultural literacy to the *"globally engaged curriculum*" and the *"globally engaged citizen"*, outlines the attributes of a culturally literate global citizen. Muller's framework includes elements of membership that reflect public discourse, traditional anthropological notions of culture, and notions of relativity and multiplicity. Thus, a culturally literate global person:

- comprehends the complexity of culture (internal (values-based) and external (lifestyle) components);
- analyses the attributes of their own culture;
- moves toward cultural relativism rather than toward cultural fundamentalism (Miller, 2006).

In line with Rosen and Muller, Polistina (2009) discusses cultural aspects of sustainability and considers that cultural literacy includes cultural competence, critical reflection, and the analysis of the behaviours of dominant cultures. She brings into focus four critical cultural-literacy skills.

1. Cross-cultural awareness. "Paralleling" different cultural traditions, beliefs and social systems; "parallels" rather than comparisons increase cultural literacy.
2. Local cultural awareness. Accepting and respecting the knowledge within local cultures is the pre-requisite in the development of cultural literacy.
3. Critical reflection and thinking. The need for self-critique, self-reflection, or reflection on the trajectory that society is taking.
4. Personal skills for acting as a change agent (survival skills to lead those who prefer the status quo) (Polistina, 2009).

Additionally, Anning (2010) outlines the key competencies one needs to cultivate to become culturally literate:

- appreciation and comprehension of cultural diversity;
- effective communication with people from other cultures;
- treating everyone without with no pre-expectations or stereotypes;
- assessment of each situation and adjusting one's behaviour (Anning, 2010).

To summarise, it could be argued that a wide range of authors acknowledges the importance of cultural literacy. They have been elaborating the core properties of cultural literacy, agreeing that cultural literacy requires awareness of the complexity of culture, critical reflection, acknowledgement of cultural diversity, and the ability to be an effective communicator.

2.1.5. Call for a culturally literate global citizen

Workplace changes, the transnational movement of refugees, economic migrants, professional and expert service providers, and student exchange programmes created a strong and urgent need for people to learning to live together in this diverse world. Consequently, cultural literacy has come into sharper focus.

However, UNESCO documents from as far back as the 1940s and 1950s illustrate the importance of international understanding and mutual appreciation. Subsection 4f of the 1955 UNESCO Director-General's Report speaks on "Culture and International Understanding", and subsection 6A of the 1957 reports on the "Major Project on a mutual appreciation of Eastern and Western cultural values". Also, surprisingly, the now-familiar slogan *"unity – in – diversity"* first appeared in the UNESCO Director-General's 1947 Report (UNESCO, 1947).

In 1995 UNESCO, considering changing social patterns, globalisation, integration and interdependence, as well as the subsequent displacement of populations and urbanisation, proclaimed,

> Tolerance is respect, acceptance and appreciation of the rich diversity of our world's cultures, our forms of expression and ways of being human…is the responsibility that upholds human rights, pluralism (including cultural pluralism) …." ("Declaration of Principles on Tolerance," 1995, p. 9).

During the next several years, much was said about *"citizens beyond borders", "citizens beyond the nation-state", "planetary citizenship", "cosmopolitanism"*. The calls for new forms of cultural literacy and "the new common ground around shared values" sound louder (UNESCO/Dov Lynch, 2011). "Agreeing to differ—or agreeing to disagree—does not imply a passive form of tolerance for the views of others—it means active engagement… on the basis of respect, equal dignity and compassion" (Financial Tribune, 2015).

Launched by the United Nations Secretary-General in September 2012, the Global Education First Initiative aims to accelerate progress towards Education for All. The guiding priority of the Initiative is to foster global citizenship,

> "…interconnected global challenges call for far-reaching changes in how we think and act for the dignity of fellow human beings. It is not enough for education to produce individuals who can read, write and count. Education must be transformative and bring shared values to life… Education must fully assume its central role in helping people to forge more just, peaceful, tolerant and inclusive societies. It must give people the understanding, skills and values they need to cooperate in resolving the interconnected challenges of the 21st century" (United Nations Secretary-General, 2012, p. 20)

Similarly, UNESCO Global Citizenship Education (2014) and the UNESCO "The Education 2030. Incheon Declaration Framework for Action" (2016) underlines the importance of citizenship education and the empowerment of citizens to resolve global challenges and to contribute to a peaceful, inclusive and tolerant world. Furthermore, it supports promoting the appreciation of cultural diversity. For example, goal number 4 of Education 2030 (2016) proclaims, "4.4. Relevant skills for decent work. By 2030… beyond work-specific skills, emphasis must be placed on developing high-level cognitive and non-cognitive/transferable skills, such as problem-solving, critical thinking, creativity, teamwork, communication skills and conflict resolution" (p. 20),

and sub-clause 4.7 suggests,

> …to ensure that all learners acquire the knowledge and skills needed to promote… a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development... Global citizenship education (GCED), which includes peace and human rights education, as well as intercultural education and education for international understanding (p. 20).

In the same way, UNESCO's "The Hangzhou Declaration Placing Culture at the Heart of Sustainable Development Policies" (2013) emphasises that cultural literacy is an integral part of quality education and plays a vital role in the promotion of inclusive and unbiased societies.

In line with leading policy-making institutions, the book "Bringing Schools into the 21st Century" by Kay & Greenhill (2011) outlines that all citizens need a twenty-first-century skill set that contributes to their employability and global citizenship. Among the major skills needed for the twenty-first century, the authors mentioned,

> Communicating and collaborating with teams of people across cultural, geographic, and language boundaries—a necessity in diverse and multinational workplaces and communities. Mutually beneficial relationships are a central undercurrent to accomplishments in businesses—and it is not only top managers who represent companies anymore. All Americans must be skilled at interacting competently and respectfully with others (Kay & Greenhill, 2011, p. 45).

A year later, Binkley et al. (2012) indicated, among ten crucial skills for the twenty-first century:

Skill number 4. Communication (speaking additional language/s; sensitivity to cultural differences; resistance to stereotyping).

Skill number 5. Collaboration (respecting the differences of people from varied social and cultural backgrounds).

Skill number 8. Citizenship—local and global (an appreciation of the differences between the value systems).

Skill number 10. Personal and social responsibility—including cultural awareness and competence (acting conducting respectably, working effectively with people from varied backgrounds, and responding open-mindedly to different ideas and values) (Binkley et al., 2012).

All of the above suggests that nowadays, culture is seen as a driver (together with science, technology and innovation) for promoting peace, security and a socially, culturally and economically inclusive environment. Policy-making institutions and leading experts in education demonstrate the importance of culture through their numerous recommendations and guidelines for the 2020s.

2.1.6. Demand for a culturally literate leader

Over the past twenty years, a number of researchers (Rosen, 2000; Tucker, Bonial, Vanhove, & Kedharnath, 2014; Manning, 2003; McCall & Hollenbeck, 2002) have tested theories and models of global leadership across cultures, identifying the essential capabilities for successful global leadership in the increasingly interdependent and interconnected world of business.

Back in 1994, Miller theorised the idea that managers must develop cultural competence and cultural literacy if they intend to be successful in the 1990s (Miller, 1994).

The early work of Kuhlmann and Stahl (1998) identified core competencies leaders need to have. With the help of expatriates who determined the skills that might enhance their effectiveness, they identified seven competencies global leaders need to be successful. Most of them relate to cultural literacy:

- tolerance for ambiguity;
- behavioural flexibility;
- empathy;
- nonjudgmentalness;
- goal orientation;

- sociability;
- meta-communication skills (Kuhlmann and Stahl, 1998, retrieved from Tucker et al., 2014).

In line with this, Rosen et al. (2000), emphasised that the more economically integrated the world becomes, the more important cultural differences become. Rosen's team conducted face-to-face interviews with CEOs of more than 75 companies in 28 countries and surveyed 1,000 senior executives around the world. They concluded that cultural literacy (valuing and leveraging cultural differences) is one of four global literacies critical in making effective global leaders (Rosen, 2000). Similarly, McCall & Hollenbeck (2002) found support for the idea of leaders learning to be global after conducting a wide-ranging study of veteran global executives across 36 countries. Their list of seven global competencies includes cultural sensitivity and the ability to deal with complexity (McCall & Hollenbeck, 2002). These two competencies are undoubtedly critical elements of cultural literacy. Additionally, Brooks & Normore (2010), speaking about a rethinking of twenty-first-century educational-leadership schools, suggested that modern educational leaders should enhance global literacy in nine specific knowledge domains, one of these domains being cultural literacy.

In 2003, Manning (2003) expressed an immediate and widespread need for effective cross-cultural leadership, pointing out that twin pre-conditions for effective global leadership are an openness to new perspectives and an ability to manage increasing cultural diversity. Moodian (2008) went further, suggesting in his book that modern leaders must not only demonstrate communication competence but also train others in their organisations to be interculturally competent.

Additionally, the beginning of the second decade of the twenty-first century was marked by several major studies. The Right Management and the Chally Group (2011) found that 80 per cent of HR professionals highlighted cultural assimilation as the foremost challenge facing leaders working abroad (Caver, Haid & Jason, 2011). Similarly, Hassell (2017), in her article about global leadership, concluded that cultural intelligence is an integral part of a global leader's success. Only a person with cultural intelligence can manage all aspects of leadership in different cultures. Referring to the study done by the professors from the University of Virginia's Darden School of Business, she points to overseas experience and sensitivity to cultural diversity as valuable additions to global leadership skills and traits (Hassell, 2017).

Another study by Tucker et al. (2014) of 1,867 CEO's, general managers, and function heads of 13 nationalities investigated the relationship between intercultural competencies and

high-performance criteria. The authors identified a set of intercultural skills and criteria for global leadership success. Thus, successful global leaders are:

- comfortable socialising with people in unknown social situations, and communicate empathetically;
- not frustrated with uncertainty and eager to figure out how things function in different cultures; and
- respectful of the political and spiritual beliefs of people of different backgrounds (Tucker et al., 2014).

In agreement with this, the top essential competencies for effective global leaders detected by the UNC/HCI Global Competence survey (2017) include:

- multi-cultural sensitivity,
- respect for differences, and
- adaptability to new environments (McCormick, 2017).

Furthermore, Lisak & Erez (2015) found out that cultural intelligence (CQ), global identity, and openness to cultural diversity are three global characteristics that help MBA students to emerge as leaders in multicultural teams.

In summary, the studies by IBM of 1,500 CEOs and Development Dimensions International (DDI) of 14,320 HR professionals and business leaders showed that many companies do not possess the leadership competencies necessary to deal with the future's business challenges (IBM, 2011; Boatman & Wellins, 2011). Culture-related challenges, such as communication, negotiation, decision-making, and team building, are likely to continue; therefore, the strong demand for globally-minded culturally literate leaders is here to stay. No manager or leader can afford to ignore cultural differences. Modern global leaders, therefore, must cultivate respect for differences, empathy, multi-cultural sensitivity, and tolerance for ambiguity. These attributes help to adapt, adjust to and operate in the culturally diverse environments of the twenty-first century.

2.1.7. Demand for a culturally literate workforce

Due to businesses and industries progressing toward rapid globalisation, intercultural contact is increasingly possible and increasingly likely. Employees have to deal with unfamiliar cultural contexts and culturally diverse workforces almost on a daily basis. Effective interaction

with colleagues from different cultures is required to navigate complex international working environments successfully.

Over the last decade, reputable institutions (Oxford Economics, 2012; British Council, 2013; World Economic Forum, 2016) have been analysing the skill set required for a successful specialist in the twenty-first century, concluding that intercultural skills are in high demand. For example, Hanover Research (2011) identified critical twenty-first--century skills that included global and cultural awareness (understanding global issues, other nations, and other cultures). A year later, Oxford Economics (2012) surveyed over 350 Human Resource professionals around the world, finding that the following skills would be in high demand over the next decade:

1. agile thinking skills (confidence with complexity, managing paradoxes, problem-solving);

2. interpersonal and communication skills (co-creativity, relationship and team building, collaboration);

3. global operating skills (management of a diverse workforce, understanding global markets, the ability to work internationally, language skills, cultural sensitivity) (Oxford Economics, 2012).

Another study by the British Council, Booz Allen Hamilton and Ipsos Public Affairs (2013) of Human Resources managers of 367 large employers in Brazil, China, India, Indonesia, Jordan, South Africa, the United Arab Emirates, the United Kingdom, and the United States found that respect for others and effective work in diverse teams are highly valued skills (British Council, 2013).

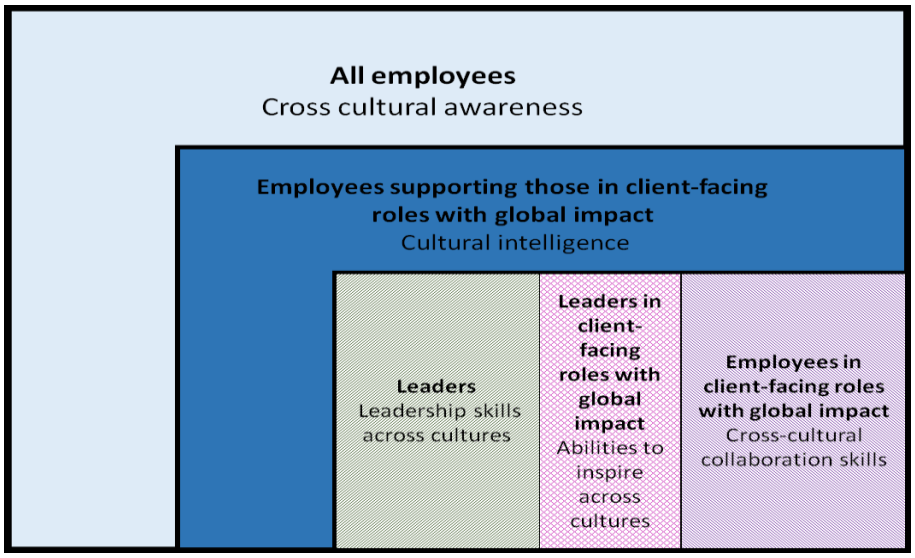
Furthermore, the World Economic Forum report "New Vision for Education: Fostering Social and Emotional Learning Through Technology" pointed out 16 skills that students would need in the twenty-first century. In Foundational Literacies, cluster skill number 6 is cultural literacy (World Economic Forum, 2016).

In addition to this, the latest LinkedIn Workplace Learning Trends Report indicates that soft skills make up the essential skill set that should be cultivated through talent-development programs. Ninety-two per cent of executives name soft skills as equally or more important than technical skills, with 64 per cent of responders highlighting the importance of communication skills and 55 per cent collaboration skills, confirming that effective communication with others (in its broad meaning) is key to success in the twenty-first century (LinkedIn, 2018).

P21 Partnership for 21st Century Learning amongst education, business, community, and government leaders developed P21's Framework for 21st Century Learning (2016) to define and summarise the skills and knowledge students required at work, for life and citizenship in the 2020s. The Life and Career Skills category includes Social and Cross-Cultural Skills as required for navigating complicated life and work environments (P21 Framework for 21st Century Learning, 2016).

Multinational companies like IBM and Google have also analysed the skills needed to work effectively nowadays. As an example of this, IBM has described global roles and the competencies required for each employee (Figure 2). This model shows that cross-cultural awareness is an essential skill all IBM employees should possess, while global leaders in client-facing roles are expected to have the ability to collaborate and to inspire across cultures (Henson, 2016).

Figure 2 Global roles and cultural requirements for IBM employees (adapted from Henson, 2016)



However, an article in the Washington Post (Strauss, 2017) caught many people by surprise. The author revealed that STEM expertise ranks last among the eight most essential qualities of Google's top employees. The seven top characteristics of success that Google learned about its employees through in-company research on hiring, firing, and promotion are all soft skills, some of them standing at the core of cultural literacy:

- communication and listening skills;
- possessing insights into others (including others' different values and points of view);
- having empathy (Strauss, 2017).

These results confirmed the finding of The Hamilton Project, an economic think tank that justified the opinion that the labour market is increasingly rewarding noncognitive "soft skills" that include communication skills and dealing well with others (Schanzenbach, Nunn, Bauer, Mumford, & Breitwieser, 2016).

Research shows that diversity in the workplace is a source of creativity and innovation (Bouncken, Brem, & Kraus, 2016; Gassmann, 2008). Consequently, employers are under increasing pressure to employ not only technically knowledgeable but also culturally literate workers that can face challenges in the global work environment. This is especially relevant when modern technology excludes low-skilled workers that perform routine tasks, favouring highly skilled workers and engaging them to boost so-called "soft skills" such as effective communication and listening skills, collaboration and team-building skills, and the ability to work interculturally and reconcile cultural differences.

2.2. The updated model of cultural literacy

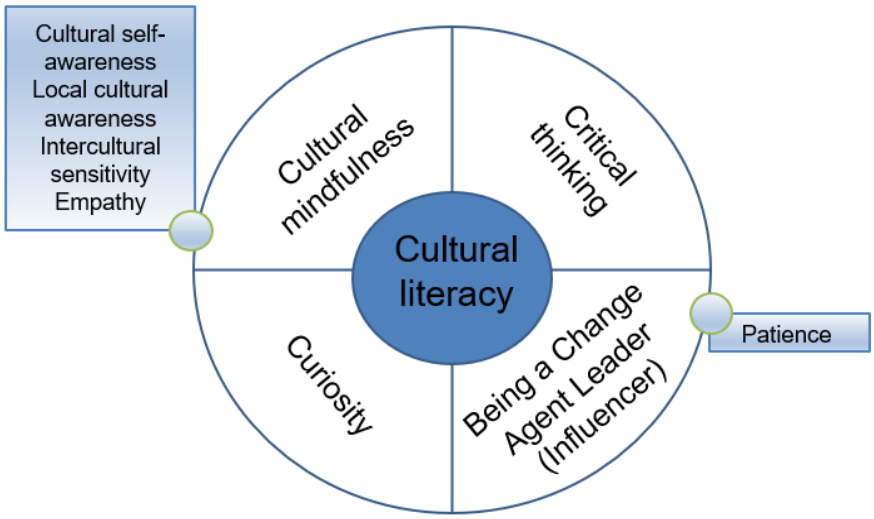
In the wake of discussions about the new de-globalising world, the era of "post-globalisation", Brexit, the external and internal policies of Trump and Putin, and the rise of nationalist parties in Europe, the question *"Does culture still matter?"* may arise. However, as the trends and literature reviewed in this article explicitly show, culturally literate citizens, leaders and workers are still in high demand. The leading policy-making institutions are developing programs that help people to strengthen skills and competencies aimed at building up cultural literacy, and these programs are seen as a valuable investment in the future. "Cultural values, assets and practices, including those of minorities and indigenous peoples, should be integrated into education and communication programs, and they should be safeguarded and given adequate recognition" (UNESCO, 2013). Cultural literacy plays an essential role in building social inclusion, promoting economic development, coping with the opportunities and challenges surrounding globalisation and innovation, and fostering sustainability.

It is worth noting that cultural literacy is a broad concept, but as the well-known saying teaches us, *"Eat the elephant one bite at a time"*. Thus, based on the literature reviewed, in order to meet the unique demands of global interconnectedness in a culturally mindful way, the following competencies and skills of the updated cultural literacy model should be cultivated (Figure 3):

1. cultural mindfulness (cultural self-awareness + local cultural awareness + intercultural sensitivity + empathy),

2. critical thinking,
3. curiosity,
4. being a Change Agent Leader (Influencer) (includes patience).

Figure 3 The updated cultural literacy model. Source: own design



Cultural mindfulness is a state of being "present", attuned, and effective in one's immediate cross-cultural surroundings**.** This requires a heightened awareness of one's own culturally constructed nature, understanding the cultural constructs of others, and responding to the culturally different without the interference of cultural biases and judgments at the moment of interacting.

Cultural self-awareness. Being aware of the critical features and biases of one's own culture. Self-awareness is an essential predictor of a global mindset (Levy, 2006). Confidence in oneself starts with the recognition that everyone wears our cultural "glasses". A component of self-awareness is cultural self-awareness; looking inwards is as helpful as looking outwards. No one leaves the house without the values, beliefs and assumptions that shape the perception of and reactions to the surroundings. As Muller (2006) argues, "the globally, culturally literate citizen may come to a position of empathy and 'informed tentativeness' regarding cultural identity and cross-cultural understanding where "to know the other, one must other the known".

Local cultural awareness. Familiarity with the cultural values, norms, and traditions of a country that is not one's own (e.g., a country where one studies, migrates to or is sent for work). It could be a step towards developing an appreciation of diversity and a means to avoiding prejudice and xenophobia (Kurian, 2013). Moreover, local cultural literacy helps to participate in a more extensive range of conversations, both locally and generally.

Intercultural sensitivity. This means being aware that people are not the same, being aware of the cultural differences and similarities between people while at the same time not assigning them a value, like good or bad, right or wrong, or whether these values should be changed. Bennett (1986) constructed a still up-to-date model of intercultural sensitivity development that illustrates the transformation from ethnocentric valuations of the world towards ethnorelativism, where one understands that an experienced cultural worldview is only one possibility among many others.

Empathy towards different others refers to the ability to put oneself in the other person's shoes, to switch the perspective and to see the world from another point of view. It involves understanding what others might think of, believe in and care about. Empathy is necessary for cultural understanding and requires self-awareness, communication skills, and awareness of cultures other than one's own.

Thus, through the process of cultural self-awareness and being open and empathetic to other people's experiences, cultural lenses and conditioning, one becomes culturally mindful.

Critical thinking. Critical thinking encapsulates the ability to think for oneself; apply reasoning, logic and analysis of new or unfamiliar ideas; make inferences; and problem-solve (Díaz-Rico & Weed, 2010). Hirsch et al. (1988; 2002) believe that manipulating and relating memory complexes (approximately 50,000 schemata) to each other enables a culturally literate person to think critically. Therefore, the more extensive the schemata, the higher the potential for critical thinking (Hirsch et al., 1988; 2002). Also, in his book "Wagner (2008) identifies critical thinking as one of the seven core competencies every child needs in order to survive and thrive in the 2020s. Wagner (2008) also states that companies seeking a competitive advantage in a world full of ambiguity and nuance need a workforce that can ask the right questions to identify the causes of a problem, to connect and interpret different concepts, and to come up with creative and effective solutions. Moreover, the context has now ascended the throne, so simply knowing cultural concepts and frameworks is not enough. Critical analysis of what to apply and when to apply it is what is needed.

Also, two traits have been overlooked which certainly help build bridges across cultures, traits that should be added to the updated model of cultural literacy: curiosity and being a change agent leader (influencer). **Curiosity** is a willingness to explore, learn, try and add to one's repertoire new ways of doing things. "This is not just passive 'tolerance' but actively valuing and seeking out diversity, which is seen as an asset. It is an openness to different cultural experiences and a willingness to explore, learn and change" (Lane, Maznevski, Dietz & DiStefano, 2010).

Being proactive stimulates learning about cultural diversity. Wagner (2008) puts curiosity among seven core skills every child needs to develop, expressing the idea that curiosity drives innovation and is one of the keys to problem-solving. In addition, Albert Einstein engages us in a deeper quest of how to relate to others with his well-known phrase, "*I have no special talents, I am only passionately curious*."

Being a Change Agent Leader (Influencer) (includes patience). Cultural literacy is an active practice: it is incomplete without the skills for achieving goals in the real world. Consequently, the demand for people who are willing to take on the role of change agent (influencer) is at an all-time high. Gay (2010) believes that in order to be culturally responsive, one should be more than just respectful, empathetic, or sensitive. Thus, Henson (2016) proposes a model for gaining a better understanding of global leadership, pointing to specific antecedents that impact the development of global leaders. The model consists of foundational requirements that include global mindset dispositions (flexibility, acceptance, curiosity, and empathy) and competencies (intercultural communication skills, cultural sensitivity, and learning agility). These antecedents are:

1. cultural intelligence (CQ);
2. certain personality traits;
3. cross-cultural contacts and experiences;
4. self-awareness (Henson, 2016).

It is clear now that being a change agent leader (influencer) is an essential part of the updated cultural-literacy model. However, a change agent leader (influencer) will face a variety of mental, psychological and emotional battles with those looking to preserve the status quo (Polestina, 2009). As this could be a tiresome and frustrating affair, being a change agent leader (influencer) also involves being patient with oneself and others. As Aristotle pointed out in his Nicomachean Ethics, "*Achieving any kind of practical wisdom requires practice*".

As we can see, many of these soft skills are interconnected and interdependent, building upon each other.

2.3. Summary of Chapter Two

As long as societies and organisations continue to experience both the opportunities and challenges surrounding today's global social and economic climate, cultural literacy —and the

citizens, leaders and employees who possess it— is of vital importance. Small steps at the educational, organizational, and governmental levels will lead to significant breakthroughs and a positive effect on pluralism, the personal employability of individuals, diversity of creative expressions, sustainable development, a culture of peace and non-violence, and an ability in people to view, critically analyse and effectively contribute to the societies and economies of the 2020s.

Developing cultural literacy is a cumulative process. In the following chapters, we will see how video games environment is adding to this process.

Chapter Three: A brief history of research on video games' impact on players

"Games are very teachers of something…The question is, what do they teach?"

Raph Koster

Video games have been around in various forms since the mid-twentieth century. During this time, they have transformed the way people spend their time. In fact, video games have become so widespread and pervasive that they are now a significant sector in the business world and one of the most popular and common forms of entertainment, with a global market value of $135 billion, which includes hardware, software, peripherals and components, showing a steady growth of 10.9% compared with 2017 (Global Games Market Report, 2016). Video games are now "central nodes in the organisation of contemporary leisure culture, computer-mediated interaction, visual culture, and information societies" (Simon, 2006). In many respects, video games have surpassed movies in gross income and popularity. The *World of Warcraft* franchise (1994 –present) has reportedly earned more than $10 billion for its developer, Blizzard Entertainment. The open-world game *Grand Theft Auto V* made $800 million in sales on the first day of its release, raking in another $200 million over the next 48 hours (Brightman, 2013). Epic Games has generated more than $1 billion from *Fortnite* (Helm, 2018). Mobile games earned $40.6 billion in 2016 (Corey, 2018). Serious games and games for educational purposes are less known (except a few), attract smaller audiences, and are quite often free of charge.

Video games have become so widespread and pervasive that they are now considered a part of the mass media, a common method of storytelling and representation (Shapiro, 2014; Kondrat, 2015). Online games have become the second most popular online activity behind streaming videos. There are more than 2.5 billion video game players worldwide (The European Mobile Game Market, 2016). Blizzard Entertainment games developer has 40 million active users (Minotti, 2018), the free-to-play game *Fortnite* has attracted 125 million registered users since its September 2017 debut (Helm, 2018). *Call of Duty: World at War*, *Modern Warfare 2*, *Call of Duty: Modern Warfare*, and *Call of Duty: Black Ops* count 24.37 million fans (Fan Page List, 2018). Juul (2005; 2011) has noted that "video games are fast becoming games for everyone". Every week people around the planet spend approximately three billion hours playing (Egenfeldt-Nielsen et al., 2015). The average young person accumulates 10,000 hours of gaming before turning 21 (McGonigal, 2011).

There are a large variety of genres and styles of video games. They range from casual, single-player games to multi-player games with thousands of players. Games also vary in content. Some are violent enough that in 1993, the US government began to rate games based on their level of violence (Kondrat, 2015).

Games are not just played; they are also talked and read about. The most discussed game in 2016 was *Overwatch*, with more than 75,000 online articles mentioning the game (Statista, 2017). Stories hit the headlines about people dying from dehydration while playing non-stop for more than 50 hours, a skill from *World of Warcraft* saving the lives of a nine-year-old and his grandparent, somebody marrying a Nintendo DS character, or somebody making a fortune playing *Call of Duty* (in mass media), making the public wonder about the world of video games. Modern video games even have their "and the award goes to ..." events (e.g. festival.gamesforchange.org). This suggests that, nowadays, real-life experience blends with virtual experience, and virtual experiences contribute to the way we live, act, think and understand our real lives.

Given the above, over the last few decades, video games have not only been a source of entertainment for children and adults but, because of uncertainty and suspicion about their impact on the thoughts, actions and behaviour of players, they have also been the object of academic interest, leading to a flourishing scholarly debate and a growing amount of multidisciplinary research.

3.1 The beginning of research on video games' impact on players

Video game studies emerged as a field of interest in academia around the late 1990s. They were first greeted with scorn and derision (Rabin, 2010) and struggled for recognition in academia. Their persistent commercial and cultural success, however, proved video games were much more than a fluke or a fad (Rabin, 2010). The video game industry showed no sign of stopping, and gradually research on video games began to form as a separate field of study.

In 1984, psychology first addressed the question of why people play video games, suggesting among possible reasons that they provide real-time strategy, goals, and stages, and encourage communication by facilitating cooperation (Greenfield, 1984). In 2001, *Game Studies* was launched, the first peer-reviewed online journal on the subject. Espen Aarseth, the editor of the journal, noted that 2001 could be seen as Year One of computer game studies as an emerging, viable, international, academic field (Aarseth, 2001). Academic research on video games continued to boom, promoting the meteoric surge of books, journals, and conferences

over the past decades. The formalism (game analysis and ontological analysis) and situationism (the analysis of game players or the culture at large) approaches started to dominate in the newly emerging field.

Several factors account for the rapid expansion of video game research. Among them:

1. A new generation of researchers who grew up with video games entered the field, bringing with them their passion for and expertise on this form of entertainment.

2. The rise of the World Wide Web, which facilitated research and the dissemination of information (Wolf, 2016).

3. The field's interdisciplinary, inclusive character, with researchers from various other fields of study coming together around the common theme of video games (e.g. ethnographers observe players, communication scholars analyse interactions between players, etc.).

Until late 1999, most public concern about video games focused on presumed dangerous behavioural consequences for minors and impressionable teens due to excessively violent content (Everett, 2005). The vast majority of research on the effects of games focused on potential negative impacts: aggression, addiction, health disorders like depression or obesity, racism, and sexism.

Slowly interest shifted from the early "*Do games induce violent behaviours*?" studies to analysis that acknowledged the relevance of this new medium (Frasca, 2003). Researchers realised that a more balanced perspective was needed, one that considered not only the possible negative effects but also the benefits of playing video games, especially considering that in the last decade video games have changed dramatically, becoming more complex, realistic and social in nature (Ferguson & Olson, 2013). Playing video games has become a social activity requiring cooperative play, comradeship and frequent interactions between team members. In fact, nearly 60% of frequent gamers play with friends, 33% with siblings, and 25% with a spouse or parent (Dai & Fry, 2014)

Lastly, there is the question uttered by everyone from pundits to parents: "How do games affect the player?" The question should not be confused with, "Do games affect the player?" They clearly do. The first question is quite difficult to answer. And there are also widely studied variations:

"Do violent games make players violent?";

"Do zero-sum games make people less cooperative in real life?"

"What do players take away from video games (on an individual level)?"

"Can video games teach children useful skills?" (Egenfeldt-Nielsen et al., 2015)

"Can video games facilitate learning that is anti-social?" (Everett & Watkins, 2008).

Prensky (2007) argues that games represent a dynamic learning environment and challenge established formal spaces. They promote problem-solving and demand parallel, not linear, processing (Prensky, 2007), and they effectively combine, on the one hand, telling and doing and, on the other, learning from the bottom up via experimentation and engagement (Gee, 2003). Some findings suggest that games are a viable alternative to traditional teaching and provide learning outcomes. Video games like *Rise of Nations*, *Assassin's Creed, Civilization, Age of Mythology* could offer a lot to history, science, politics and cultural studies. Consequently, interest is growing in the potential of mainstream games for formal and informal education. The primary claim of this line of research is that video games may have beneficial educational impacts (Prensky, 2005). Table 1 summarises the focal points of research on video games' impact on players.

Table 1 Focal points of research on video games' impact on players

Demonising video games	Praising video games
Violence and Aggression	Health benefits
Game Addiction and Gaming Disorder	Cognitive and Social benefits
Health problems	Tool for social change
Sexism	Tool for learning and teaching
Racism	4C 21st century skills

3.2. Demonising video games

At the beginning of the 1990s, game critic Provenzo (1991) raised four main concerns with video games. Video games a) can lead to violent, aggressive behaviour, b) employ destructive gender stereotyping, c) promote unhealthy "*rugged individualist*" attitudes, and d) stifle creative play. Twenty-five years later, these concerns are still present in video games studies. A video game theorist Jesper Juul finishes this recent blog post by noting,

> Play now appears to be a dark place from which grows discrimination, dominance, and threats of violence (...) I hope we can keep our focus here, that

we can be aware of what is happening and do what we can to change things (...),

while we still remember the good sides of play (Juul, 2017).

As a result, numerous critics and children's advocates continued to worry about the impact of video games on people play them.

3.2.1. Challenge 1: Aggressive and violent thoughts and behaviours caused by video games

Violence and aggression is a controversial topic and has been the subject of intense debate among researchers for decades. Thanks to rapid technological progress, each new generation of video games presents graphically violent material that is more realistic than the previous generation. It is certainly worth mentioning that 79 to 85 per cent of all video games contain violence (Dill, Gentile, Richter, & Dill, 2005).

Researchers, politicians and parents alike express concerns about antisocial behaviour and maladjustment encouraged by the ever more realistic violent content unleashed on impressionable minds, especially those of children and adolescents (Kirsh, 2012). The possibility of violent video games having effects on aggressive behaviour, aggressive cognition, aggressive affect, prosocial behaviour, and psychological arousal has been studied for decades. The topic received enormous media attention when mass killings in American high schools were linked to adolescents playing violent video games (e.g. Columbine High School in 1999 and Newtown in 2013). Former US president Barack Obama in 2012 requested Congress to allocate $10 million for the investigation of effects of violent media, including video games (Molina, 2013).

Also worth noting is that research on the effects of violent video games on aggressive behaviour in children and adolescents offers *"a cautionary tale"* (van 't Riet, Meeuwes, van der Voorden, & Jansz, 2018). There is indeed an important body of work to consider: some researchers claim violent behaviour and video games are strongly tied (Anderson et al., 2008, 2010; Anderson & Bushman, 2001; Bushman & Anderson, 2002; Griffiths, 1999; Lemmens, Valkenburg, & Peter, 2011), some say these effects are weak (Hilgard, Engelhardt, & Rouder, 2017), and still others affirm that the aggression effect is smaller or no different compared with other media (Sherry, 2001; Devilly et al., 2017). "During the past 20 years as video games became more popular, youth violence plummeted to 40-year lows, the lowest since the 1960s" insists Chris Ferguson, associate professor of psychology and communication at Texas A&M University (Molina, 2013). To support the latter statement, a 2015 study found that aggravated assault and homicide rates tend to drop in those months when new instalments of popular violent

video games are released (Markey, Markey & French, 2015). Conversely, a quantitative review of the literature published between 2009 and 2013 by the American Psychological Association found a consistent relation between violent video game use and hikes in aggressive affect, behaviour and cognition, on the one hand, and declines in prosocial behaviour, sensitivity to aggression and empathy, on the other (APA Task Force on Violent Media, 2015).

This suggests that the possible effects of violent video games on aggressive thoughts and behaviours remain a concern for society and the subject of ongoing academic debate (Kepes, Bushman, & Anderson, 2017).

3.2.2. Challenge 2: Video Game Addiction

Another research topic where scholars lack consensus is video game addiction. Video game addiction is an "excessive and compulsive use of a computer or video games that results in social and emotional problems; despite these problems, the gamer is unable to control this excessive use" (Lemmens, Valkenburg, & Peter, 2009, p. 78).

In the 1980s and 1990s, a body of research on this topic emerged speculating about applying the tenets of addiction to video game playing (Loton, 2014). Over the last decade, the number of empirical studies examining wide-ranging aspects (from video game addiction and co-morbidity with other habits to video game addiction treatment and screening instruments) of video game addiction has skyrocketed (see Griffiths, Kuss, & King, 2012; Mihara & Higuchi, 2017, for discussion). This is partially due to the mass media depicting extreme adverse outcomes of video game addiction, either directly such as deaths from dehydration or lack of movement or indirectly through neglecting dependants (Loton, 2014). Other factors are the American Psychiatric Association's inclusion of Internet Gaming Disorder (IGD) as a potential diagnosis in Section III of the DSM-5 (Gentile et al., 2017) and the World Health Organization's (WHO) classification in 2018 of "gaming disorder" as a diagnosable condition (Price & Snider, 2018).

Recent findings show that players who meet the IGDS (Internet Gaming Disorder Scale) criteria for video game addiction displayed poorer emotional, physical, mental, and social health (Stockdale & Coyne, 2018). However, other research demonstrated that only a small proportion of the general population (between 0.3% and 1.0%) might qualify for a potential acute diagnosis of Internet Gaming Disorder (Przybylski, Weinstein, & Murayama, 2017).

Thus, gaming addiction has become another area of significant importance, especially from the point of view of psychological and psychiatric research (Griffiths et al., 2012), and it is under constant discussion.

3.2.3. Challenge 3: Health problems caused by video games

The ways video games may affect the health and well-being of players has long been under examination (Dorman, 1997). A wide range of negative health consequences has been reported. Online gamers with more extended weekly gaming hours tend to have more severe depressive and social phobic symptoms (Wei, Chen, Huang, & Bai, 2012); lower life satisfaction and elevated levels of anxiety and depression (Mentzoni et al., 2011); lower school achievement, increased truancy, reduced sleep time, and increased suicidal thoughts (Rehbein, Psych, Kleimann, Mediasci, & Mößle, 2010); higher risk of feeling low, feeling irritable or in a bad mood, and feeling nervous, tired, exhausted, and afraid (Brunborg et al., 2013); and lower self-competence scores in academic, interpersonal, and behavioural skills (Funk & Buchman, 1996). By spending inordinate amounts of time on their game consoles or computers, players neglect their social life and limit leisure activities to such a degree that they end up suffering from obesity (Vandewater, Shim, & Caplovitz, 2004).

Although video gaming has long been associated with negative health consequences, Primack et al. (2012), in a systematic review of the literature, reported that video games may be useful for therapeutic purposes, such as providing physical and psychological therapy, improving disease self-management, health education and physical activity, and providing skills training for clinicians. Calvert, Staiano, & Bond (2013) reported that some video games get youth to exercise and even lose weight, and other similar research demonstrated that video games could positively affect health behaviours and outcomes (Kato, 2010). In the same vein, several meta-analyses of health outcomes among children and adolescents concluded that the integration of active video games in schools, communities and homes might help children/adolescents develop a healthy lifestyle (Gao, Chen, Pasco, & Pope, 2015; Biddiss & Irwin, 2010). Moreover, action gaming enhances visuospatial attention throughout the visual field (Green & Bavelier, 2006) and can reduce symptoms associated with depression (Kühn, Berna, Lüdtke, Gallinat, & Moritz, 2018).

The above-mentioned arguments, conversations and debates are inconclusive; more evidence, therefore, is needed about video games and their effects— both positive and negative—on health.

3.2.4. Challenges 4 and 5: Sexism and Racism[7]

More and more academics and pundits call into question the neutral nature of video game content. Frequent depictions of violence are an example of problematic content (Egenfeldt-Nielsen et al., 2015). Other pressing questions are whether games present a stereotyped, perhaps even discriminatory, picture of the world, women and minority groups.

The children's advocacy group Children Now conducted a content analysis of a sample of seventy top-selling video games in 2001. The study's findings revealed that video games often ignored women and people of colour and reinforced racial and gender stereotypes.

- Female characters are underrepresented in video games; they only make up 16% of all characters, are often props or bystanders (50%), and are more likely to scream and wear revealing clothes.

- Male and female character roles and behaviours are stereotyped, with males portrayed as competitors (47%) engaged in physical aggression.

- The majority of the video game population is white.

- There are no Latino or Native American characters in any of the games;

- Nearly all heroes are white. African Americans and Latinos are typically athletes, Asian or Pacific Islanders fill roles of wrestlers or fighters, and non-whites, in general, are often computer-controlled antagonists (Glaubke, Miller, Parker, Espejo, 2001)

Thirteen years later, not much has changed. Behm-Morawitz & Ta (2014) examined 383 US magazine advertisements for console, mobile, and PC video games, revealing that US video game marketing uses stereotypes, including the white male hero, the submissive sexualised female, the Asian ninja, and the deviant black male. A number of studies critical of the medium find video games to propagate the worst kind of social prejudice and to objectivise women (Egenfeldt-Nielsen et al., 2015).

The questions of sexism, racism and minority group discrimination in video games are closely connected to the main research question of the present thesis so that they will be examined in detail in the next subsections.

7Some parts of 3.2.4 were published in Shliakhovchuk O. (2018) Communication Across Borders and Cultures: Impact of Race and Gender Stereotypes in Video Games on Players, The 4th Global Pioneerism, Innovation and Excellence Conference, 15-16 October, At: Dubai, United Arab Emirates, Volume: 1, pp.12-24

3.2.4.1. Sexism in video games

Scholars have shown increasing interest in the issue of sex in videogames since the late 1980s–early 1990s. Braun & Giroux (1989) carried out one of the earliest studies about arcade game content, focusing on depictions of violence but also reporting that arcade games featured 60% male characters and only 2% female characters. Provenzo (1991) carried out a content analysis of 47 top-selling games on the Nintendo platform and identified 115 male and only 9 female characters. Some years later, Dietz (1998) examined the portrayal of women in a sample of 33 popular Nintendo and Sega Genesis video games, revealing a total absence of female characters in 41% of the games that featured characters. Five years later, Beasley & Standley (2002) analysed 47 randomly selected games from Nintendo and 64 from Sony Play Station games, finding that out of the 597 characters coded, only 82 (13.74%) were women. In the same way, Scharrer (2005), after analysing the images and text of advertisements in the three best-selling video game magazines, found males outnumbered females three to one, and female characters were depicted as sexier and more attractive compared with their male counterparts. Similarly, Robinson, Callister, Clark, & Phillips (2009) examined the official websites for games promotion. Their results showed male characters outnumbering female characters three to one (577 male characters vs 196 female characters). EEDAR, a video game metadata research firm, released findings showing that out of 669 titles with protagonists of a specific sex, only 24 were exclusively fronted by women (Parmar, 2013).

In addition, female characters are greatly stereotyped. The most popular way of stereotyping females in video games is by creating sexually provocative female characters that are almost undressed or dressed seductively (Kondrat, 2015). Female characters typically wear tight clothes, shorts, mini–skirts, and bathing suits (Robinson et al., 2009). Beasley & Standley (2002) detected that 70% of female characters in Mature-rated video games and 46% of female characters in Teen-rated video games were shown with abundant cleavage, 86% of female characters were dressed in clothing with low/revealing necklines versus 14% of male characters in clothing with low/revealing necklines, and 48% of female characters had outfits with no sleeves versus 22% of male characters. Similarly, Dill & Thill (2007) conducted a content analysis of images of video game characters from top-selling American gaming magazines, discovering that female characters were portrayed as sexualized (60% versus 1%), scantily clad (39% versus 8%) and showing a mix of sex and aggression (39 versus 1%) comparing to male characters. In addition to this, Burgess, Dill, Stermer, Burgess, & Brown (2011) and Beasley & Standley (2002) found that female characters are usually portrayed with unrealistically large breasts, thin waists, large, exposed buttocks, and long legs. Even though *Face* magazine featured Lara Croft as one of the most popular twentieth-century icons, many critics argue that Croft's

character, with its exaggerate breasts, thin waist and with tough, dominant behaviour, is conceived to appeal to a male audience (Jansz & Martis, 2007).

In addition, Ortego Hernando, Ramírez & Riera Forteza (2002), through the analysis of game covers, concluded that games promote a subordinate and stereotypical image of women. Women are shown as not very bright, and they need the male protagonist in the game to save them (Gutiérrez, 2014; Provenzo, 1991). Women usually play submissive, stereotyped roles or are marginalised or objectified (Burgess et al., 2011; Dietz, 1998; Provenzo, 1991), or they have no meaningful value as characters in the game (Burgess et al., 2011). Similarly, research by Martins, Williams, Harrison, & Ratan (2009) and Williams et al. (2009) found that in forty per cent of the games studied, no female characters were present; if they did have a role, it was a secondary one. Dietz (1998) determined that most of the female characters are portrayed as *"damsels in distress"*,

> The Adventures of Bayou Billy (1989), the beginning of the video game shows a woman in a low-cut, red dress. This woman has large, well-rounded breasts. A man is holding her and has a knife placed on her throat. Apparently, this man has kidnapped Annabelle and Billy's mission is to save her (p. 435).

A couple more examples: in the game *Mortal Kombat*, the character of Princess Kitana, while having outstanding fighting abilities, needed assistance from the male characters (Stermer & Burkley, 2015). In the opening stages of *The Legend of Zelda: Wind Waker*, the protagonist Link travels to the Forbidden Fortress to confront his sister's kidnapper.

As shown above, the overwhelming majority of video games present female characters as peripheral, accessories, *"eye candy"* and prizes for the male protagonists, and in the landscape, the scene where the performance takes place (Gottschalk, 1995), females of a different race are almost invisible. The dominant trend is for there to be no female protagonists representing women as strong and independent. Interestingly, Ramírez et al. (2002) seemed to find some indicative change, with five male characters in submissive positions and 50% of the female characters in dominant positions.

3.2.4.2. Impact on players of the sexist representation of women

Kondrat (2015), Dickerman et al. (2008) and Gutierreza (2014), among others, have researched the ways in which video games portray women affects how they are viewed outside those games.

Since video games are a part of today's mass media, they are also partly responsible for promoting unrealistic ideal body images. Youth playing video games with ideal female body

images are more likely to base their concept of what women should look like on this representation (Kondrat, 2015). Near (2013) studied 399 box art cases from games released in the US from 2005 to 2010 and showed that sales were positively related to the sexualisation of female characters. He concluded that there was an economic motive for the marginalisation and sexualisation of women in video games (Near, 2013). Generally, women in video games are portrayed with significantly larger breasts than most women in real life. Measurement of the body proportions of female characters in games aimed at older players showed them to be thinner than real adult females (Martins et al., 2009). Because of its frequent portrayal in video games, this image of the female body has contributed to the unrealistic body perceptions prevailing among females today (Kondrat, 2015).

The data also indicate that female portrayals in video games affect people's beliefs about women in the real world on the one hand, and women' self-efficacy on the other hand. Behm-Morawitz & Mastro (2009) found that playing the sexualised heroine resulted in lower self-efficacy than when playing the non-sexualized heroine. This indicates that female players' exposure to sexualised images of women in video games may negatively affect their confidence in their ability to succeed in the real world. In line with that, Funk (2001) suggested that playing games with harmful gender stereotypes might have an impact on how younger children view themselves and others, because of the lack a mature gender identity at this age. Adults may be affected as well. Playing video games in which women are portrayed as brainless victims may reinforce negative gender stereotypes that strengthen the belief that women are less capable than men.

> Examine the game box of one of the top-selling games. You will likely see a male with a weapon, and possibly a well-endowed damsel in distress. If you happen to choose Tomb Raider, you will see an underdressed buxom female with a weapon. Both pictures are likely to be attractive to males, and basically consistent with schemas for male behaviour (being aggressive or scrutinising good-looking females). Neither picture is likely to be appealing to females because they invoke the gender stereotype that women are brainless and helpless, or that power for women is dependent on sexual appeal (Funk, 2001, p. 1).

Dietz (1998) adds, "This representation is harmful to children of both sexes since they will internalise these expectations and accept the idea that women are to be viewed as weak, as victims, and as sex objects." A survey of teens confirmed that even non-gamers hold the stereotypes of female characters as sexually objectified physical specimens (Dill & Thill, 2007).

Beck, Boys, Rose, & Beck (2012) found that depictions of sexually objectified women and violence against women in a video game resulted in statistically significant increased rape-myth acceptance (rape-supportive attitudes) in male study participants. Similarly, Deskins (2015) revealed that players of violent video games scored higher on benevolent sexism and rated the

sexist stimuli messages more amusing than others. Some players have reported that they gained the perspective from some video games that women cannot be trusted (Bourgonjon et al., 2016). Additionally, Yao, Mahood, & Linz (2010) discovered that sexualised female characters may prime males' thoughts about sex and encourage them to view women as objects, fuelling negative female stereotypes.

Female players are aware of the sexism present in the games and wish that gender representations were more balanced and realistic (Schott & Horrell, 2000). Meanwhile, Brown (2008;2014) states that female players must reconcile themselves with gender stereotypes imported into virtual worlds through sexualised images of female avatars. A female *EverQuest* player reflects,

> I don't have a problem with a 'sexy' character; I just don't want to play one where body parts are hanging out in the world (half-elves, dark elves). This did influence my choice of a race because the dwarven women are allowed to stand straight and keep themselves clothed in something that makes sense. Guess I have a gripe about representations of fantasy women; who would go into battle wearing a chain bikini? Really? OUCH! (p. 24).

In 2013, Anita Sarkeesian posted series of YouTube videos addressing female tropes in video games (Totilo, 2013). Her identification of five common characters (damsel in distress, fighting sex toy, sexy villainess, sexy sidekick and females as background decoration) led to herself being harassed receiving rape and death threats and acquiring an army of haters for her attempt to shift the dominant perspective about video games (Cunningham, 2016).

On the positive side, there are more and more games which are trying to equally represent females and males protagonists, and the situation with the adverse representation of women is slowly improving (Kondrat, 2015). According to the experts' opinion, women are currently better represented in video games than they were in the 1980s and 1990s, and this slow change is because of the new independent game companies that are interested in creating new types of video games with diverse characters. Lynch, Tompkins, van Driel, & Fritz (2016) examined the in-game content of 571 titles released between 1983 and 2014 that featured playable female characters. The results indicate that sexualisation is lower nowadays than in the 1990s, role-playing games feature less sexualised female characters than traditionally male-oriented genres, and the critical success of games was unrelated to sexualisation. The number of female characters is definitely increasing. Some of the top games feature active main characters like Lara Croft (*Tomb Rider*), Tina (*Dead or Alive*), Xiaoyu (*Tekken 3*), Jill Valentine (*Resident Evil*) or Princess Zelda (*The Legend of Zelda*), which represent very potent figures (Schott & Horrell, 2000; MacCallum-Stewart, 2008). Furthermore, PlayStation4 title *Horizon Zero Dawn* as well as *Gravity Rush 2, Nier Automata* and *Tacoma*, all showcasing female protagonists.

However, although the number of games featuring playable female characters is on the rise, games still tend to show more sexualised female characters in secondary roles than female primary characters (Lynch et al., 2016). Gender stereotypes are particularly robust with respect to physical features. Men are still represented as hypermuscular characters and women as hypersexualised characters. In other words, although female characters have become leaders in quite a number of games, they are still overwhelmingly portrayed in a sexualised way (Jansz & Martis, 2007). Notwithstanding, in so-called "casual games", more than half of the main characters are women, and games aimed at children are less likely to sexualise female characters. It means that there is some heterogeneity of gender representation in games by genre and target audience (Wohn, 2011).

For example, a content analysis of the character of April Ryan in *The Longest Journey* immediately reveals her tight clothes, full breasts, big innocent eyes and sensuous mouth, which might lead one to conclude that she is a sex object and a passive figure. However, April Ryan is a part of a trend of strong and beautiful women in media. She is an independent and resourceful character who is not only the game's protagonist but also takes decisions that can alter the fate of the world, who engages in dangerous activities and who doesn't depend on men (Egenfeldt-Nielsen et al., 2015).

Interestingly, the Pew Research Centre (2015) investigated if players believe "video games portray women poorly". Forty per cent say they are not sure whether video games portray women poorly, 18% say this is not true for most games, and 14% say this is true for most games. More than a quarter of all adults (27%) say this is true for some video games but not others (Duggan, 2015).

Although these results are somewhat limited, they shed light on the influence of exposure to sexualised female video game characters (provocative and tight clothing revealing their large breasts and long legs) on individuals' gender attitudes, beliefs and self-concept. Given that many video games make use of stereotypes and particularly negative gender-related stereotypes, there is a need to investigate how video games might be reinforcing and normalising the treatment of women in society.

3.2.4.3. Racism in video games

A great deal of video games available on the market contains racially stereotypical material, with minority characters being under-represented and built around either negative or cultural stereotypes.

In its study, Children Now (2001) revealed that blacks account for one-fifth of all characters, Asians for less than 10%, Latinos for just 2% (all of which are men and involved in sports games), and native Americans are totally absent from the game world. Similarly, Leonard (2002) reported that 56% of all characters are white and that African Americans come in second with 22% (mostly portraying sports competitors). Jansz & Martis (2007) found that the majority of video game characters were white (about 70%), especially among the leading characters (75% White), and even more so with women, where the lead characters were almost exclusively white. There was a little more diversity among non-playable characters (NPCs), but whites were again the largest group (60%), most male characters were white (about 70%), and there were just three women: white, Latino and Asian. Identically, Passmore, Yates, Birk, & Mandryk (2017) categorized 42 characters in 63 games as humans in games released between 2012-2017; of the main characters, the majority (69%) were white, with some bi-racial or ambiguous (14%), some Asian (8%), three black (6%), hardly any Native American (2%) and no Hispanic (0%) main characters. The distribution of NPCs was: white NPCs (55%), Asian (13%), Black (10%), Hispanic (4%), Native American (3%), and (13%) bi-racial or ambiguous. Furthermore, Williams, Martins, Consalvo, & Ivory (2009), after analysing 150 games across nine platforms, exposed a systematic over-representation of males, White (85.0%), Black (9.7%); Bi-racial (3.7%); and Asian (1.7%) and adults, and a systematic under-representation of females, Hispanics, Native Americans, children and the elderly as the main characters.

Equally important, the investigations by Burgess et al. (2011); Dill, Gentile, Richter, & Dill (2005); and Glaubke et al. (2001) revealed minority groups in games being presented as stereotypes. Glaubke et al. (2001), after examining 70 console games, found that Latino characters are only present in sports games; black characters were portrayed as more violent, with a lack of pain or physical suffering; Asian characters only accounted for wrestling and fighting roles; many of the Mexican characters were off-centre and not entirely likeable; the black and Latino male characters tend to be competitors within sports games, and 70% of all Asian characters were combatants. Similarly, Burgess et al. (2011), after studying over 149 games, found that 100% of black males were portrayed as either athletic, violent, or both. The results of the content analysis showed that black characters are often a menace to society, holding oversized weapons and posturing gang-style, while Asian characters practice martial arts, give each other threats, and do not save anyone (Burgess et al., 2011). Higgin (2009) adds, "black and brown bodies, although increasingly more visible within the medium, are seemingly inescapably objectified as hyper-masculine variations of the gangsta or sports player tropes". Blacks make up a disproportionate number of athletes in sports games like *NBA Street, NFL Street*, *Madden 2003*, "jumping as high as the sun, knocking their competitors through concrete

walls, and making unfathomable moves on the court". Coupled with sports games, nearly 80% of African Americans are involved in physical and verbal aggression, whereas only 57% of the White characters are (Leonard, 2003). Some examples showing the stereotypes for black characters are Lee Everett from *The Walking Dead* and Alyx Vance from *Half-Life 2*. *The Walking Dead* opens with a handcuffed Everett sitting in the back of a police car while Vance's character from *Half-Life 2* is a non-playable sidekick.

Whites are the majority of the characters and an overwhelming number of heroes. Gottschalk (1995) speaking about videology, states that the "Hero" is overwhelmingly young, white, muscular, and male, "He is blond. He is broad. He is buff" (Herz, 1997). In fantasy MMORPGs, white protagonists engage in heroic battles, they are brave, strong and moral, "their completion of herculean feats earns them well-deserved glory and esteem" (Embrick, Wright, & Lukács, 2012).

In consonance with that, Dickerman et al. (2008) reveal that many characters belonging to the minority groups have a certain set role within a game. Adams (2003) speaking about fighting games, concludes that minority characters are included in these games just for the sake of a pure visual variety. Similarly, minorities are rarely a primary character (Burgess et al., 2011) and function primarily as objects of oppression, derision, or as narrative obstacles to be overcome or mastered (Everett, 2005).

The other-as-enemy is overwhelmingly a male, with darker skin and foreign-sounding name, speaking in heavily accented English or unrecognisable languages. The hero's life is valuable, limited in number, and monitored by flashing warning signals. The life of the "other" seem to be less important and is vanished off the screen as soon as the character is killed (Gottschalk, 1995). For example, *In Ethnic Cleansing*, the player kills Blacks and Hispanics before entering a subway. In *Grand Theft Auto: Vice City*, during one of the missions, the players were instructed to *"Kill the Haitians."*

In like manner, Parungao (2006), cited in Gillentine (2007), researched four-game content of *Kung Fu, Warcraft 3, Shadow Warrior, and Grand Theft Auto 3* to evaluate the Asian character portrayal with and to assess gamer perceptions of Asian stereotypes. Parungao's study (2006) indicated that characters in these games wear fabulous Asian costumes, possess martial arts skills, and promote a shifty-eyed, angry eye-browed look (Gillentine, 2007).

Similarly, Dill, Gentile, Richter, & Dill (2005) after the examination of 20 computer games found out that targets of violence are usually portrayed as Middle Eastern. Gerber (2016), after examining some first-person shooters (FPS) games, claims that Arab or Muslim are

represented in these type of games as the targets to eliminate: bearded, roaring in Arabic, shooting everywhere and with a lack of self-control. Borries et al. (2007) claim that virtual combat games allow western users to "fight" enemies in distant cities (usually in the Middle East). *Delta Force: Black Hawk Down, Gulf War I, Gulf War II, Full Spectrum Warrior* reinforce imaginary Arab cities full with terrorism, people in these games are represented as shadowy, subhuman, racialised Arabs, alien "terrorists" to be repeatedly annihilated. Šisler (2008) explores the stereotypical representation of Muslims and Arabs in 90 of European and American Video Games; he concludes that in adventure and role-playing games 'Orientalist' image is explored while in first-person shooters, Arabs and Muslims are enemies.

In the same fashion, Everett (2005) after analysis of the skin colour types that the gamer could choose in *R2R-2*, found that it's possible to play the games as Maori, Brazilian, Hawaiian, Taiwanese, and Mexican, but these characters are described as "Beast from the East", "Maori fighting ways are a savage," "lacking confidence", etc. While white skins representing Italy, Croatia, England, Canada are described sympathetically, "high tolerance to pain", "dedicated to boxing", "refined skills and superior knowledge of the sweet science", etc. Everett concluded that these skin colour types are still undesirable to choose. In the same vein, the characteristics of races in *World of Warcraft*, the most popular MMORPG, were analysed. The Orcs, are tropes of Africa, are brutal and mindless, beastly, aggressive, wily and superstitious; the speck of the Troll contains stereotypical West Indies accents; the Tauren race has hooves for feet, horns on their heads, "huge, bestial creatures" who "cultivate a quiet, tribal society" representing the Great Plains of North America (Embrick et al., 2012).

The famous *Grand Theft Auto* series has historically a fame of promoting, and reinforcing stereotypes about minority groups and women: the black criminal; the Latino drug dealer; the heavy accented East-Indian cabbie; the Chinese crime boss; the Italian mobster; the poor-English speaking Chinese women walking on the street; "charming, smart, traditionally well-dressed, strong Sicilian family", the Jewish attorney portrayed as an effeminate, cowardly poseur with the stereotypical intonation of the *"New York Jew"*; Puerto Rican female drug dealers and assassinating rival gang members (all people of colour). In the *Liberty City of GTA III*, your enemies consist of the Triads (Chinese), Yazuka (Japanese), Diablos ("Hispanic street gang"), South Side Hoods (blacks), Columbian Cartel, and the Yardies (Jamaican) gangs. In *GTA: San Andreas, Def Jam Vendetta and Saints' Row* Black women and Latinas are portrayed as sexually available bystanders or as street walking-walking prostitutes marginalising women by race and ethnicity (Everett & Watkins, 2008). An extreme case is *Custer's Revenge*, early

eighties game where players could have sex with an Indian squaw tethered to a pole with no other goal as rape (Schott & Horrell, 2000).

Racism toward immigrants from European nations that have not become part of the "white" group can also be found (Embrick et al., 2012).

3.2.4.4. Impact of racist representation of minority groups on players

Racially typecast characters and stereotypical narratives in video games encourage "othering" the opponent, treating him as "not like us" (Koster, 2013) making "You" versus "Them" conflict structure a standard and understood functional motif (Everett, 2005). The games like *Soldier of Fortune, Rainbow Six, Counterstrike, Delta Force Land Warrior, Medal of Honor* teach players that it is fine to send covert operatives to foreign culture to kill other cultures representative, moreover, they get the point and rewards for doing this (G-tech, cited in Everett, 2005, p. 324). Could players be persuaded to join a political organisation that advocated its message through video games like in the game *Ethnic Cleansing* where Jews, Mexicans and other ethnicities are offered as the only real enemies in an otherwise classical style first-person shooter game? However distasteful, the message is clear, and converting impressionable teenagers to a racist agenda is the explicit goal (Egenfeldt-Nielsen et al., 2015).

This attitude both toward the dominant culture and toward "others" becomes more enhanced, not less when a player can literally take on whichever "skin" he or she wishes (Williams, 2010). Many games allow the player to change the way they look as an avatar is customizable. Given this fact, Martey & Consalvo (2011), Behm-Morawitz, Pennell, & Speno (2016) and Williams (2010) have studied the way players choose to look, and how the way an avatar appears changes the way a player acts. Behm-Morawitz et al. (2016) found that gamers identified more with avatars that looked like they did, but that this identification did not mean that the character's racism was lessened. Interestingly, Martey & Consalvo (2011) found that, even when players had a chance to be from minority groups, they tended to create avatars which were white. Martey & Consalvo (2011) write that even though *Second City* players could appear any way they chose, they felt they needed to appear part of a dominant culture, "leading many participants to seek socially acceptable appearance that would be interpreted in certain ways as part of their interactions". When characters chose not to be white, they were more likely to select a non-human appearance than they were to appear Black. Even when players can have an avatar which looks exactly the way they want to look, most decide to appear from the dominant culture, or not human at all, rather than as being a part of a definable minority group. This shows that the

negative stereotyping of minority groups in video games makes those characters less desirable for many gamers.

According to Parungao (2006) study cited in Gillentine (2007), gamers do notice the stereotypes present but internalise them only for gameplay. The majority of gamers studied thought video games aren't aimed to be politically correct, and society should not take them seriously, moreover, the offensive names, slurs, or physical features depicted in today's video games seem to enhance gameplay. Yet, there were a minority of participants who acknowledge that the racism in games was terrible. In line with that, Gillentine (2007) directly addressed the concerns of how players perceive and accept stereotypes portrayed in video games. In her dissertation research, she found most people indicated their awareness of the excessive use of racial and gender stereotypes in video games, and all participants believed the negative stereotypes could influence or be misinterpreted by younger players. Similarly, Dickerman et al. (2008) have found that the content of video games often portrays minority groups in a stereotypical negative light and that players of video games, both male and female, having been exposed to this content, often show signs that their belief system is incorporating these beliefs.

At the same time, it is worth admitting that the situation starts changing little by little. Gaming is now more global and popular and is becoming more diverse since it starts including groups of people who in the past were a neglected subject in gaming. The action-adventure game *Assassin's Creed III: Liberation* features the half-French, half-Haitian protagonist Aveline living in 18th-century New Orleans, a first-person narrative adventure *We Are Chicago*, played through the eyes of a young African-American man Aaron who grows up in Chicago's Englewood neighbourhood, in *Mafia 3*, its protagonist, Lincoln Clay, is African-American, *Watchdogs 2* had black male lead, moreover *Mirror's Edge 2, Uncharted 4* and indie game, *Virginia*, all featured women of colour. The PlayStation 2 title *Just Cause*, set in the fictitious tropical island of San Esperito, is one of the first games with a protagonist of Hispanic descent, thus offering a broad audience of players the possibility of virtual experimentation with Latin identity.

Notably, in a dissertation study of African-American ninth-graders playing *Civilization III*, Squire (2004) found that while most students assumed the game was a simulation of European colonisation, they did reflect and asked why it was Europeans colonising the Americas and not, for instance, Africans or Asians colonising America or Europe?

Another point worth noting under this theme is a global release of video games. Some countries ban video games for seemingly arbitrary reasons, sometimes even after cultural adjustment of the content to that specific country. As such, Germany, sensitive to its past, created

a list called the index or banned list for the games depicting Nazi iconography or on the violent content in its video games. Banned list games incredibly hard to market and sell as it is prohibited to advertise and to display them in stores. Same true for China that is famous for banning video games for distorting history and damaging China's sovereignty and territorial integrity (Rabin, 2010).

Finally, the Pew Research Centre (2015) revealed that 33% of game players do not think most video games portray minority groups poorly. According to its data, 39% of Hispanic and 24% of black gamers feel that most games do not portray minorities poorly. However, 15% of black and 12% of Hispanic game players do feel that most video games represent minority groups poorly, compared with only 7% of white players (Duggan, 2015). The same year, Nielsen (2015) also conducted a survey, where most gamers said they had a little problem with representation in games, but about one-fifth of gamers across racial lines said they felt strongly that video games underrepresent some races. That number climbed to 50 per cent when looking just at Asian American gamers. Interestingly, in the same survey, 65 per cent of LGBT gamers said they felt sexual orientation was not well represented in games.

3.3. Praising video games

Despite the early focus on demonising video games, in the late 1990s some researchers suggested that while excessive gaming is clearly an issue, it would be narrow-sighted to ignore the potential benefits of using video games to develop useful skills and to not convert them into a new method of learning.

At the beginning of the decade, the video game industry itself showed signs of positive change, becoming more inclusive and culturally sensitive, and broadening the themes of its narratives and stories. This was due to several factors: a larger and more diverse pool of players; increased negative reactions against offensive stereotypes, motifs and oversimplifications; and the advantages offered by the latest generation of software and hardware. More games are now released with an "E for everyone" ESRB[8] rating than with the "M for Mature". Having a game rated M restricts its audience and as a result, the potential for profits. Thus, being inclusive makes financial and ethical sense; if a game features themes that turn away women or denigrates or insults certain ethnic groups, it will be less successful commercially amongst the general population and may even be pulled from virtual world by a media backlash or pressure from

[8] The Entertainment Software Rating Board (ESRB) is an American self-regulatory organization that assigns age and content ratings to consumer video games.

interest groups. Furthermore, more and more video games started to act as "simulated environments" encouraging players to solve various "real" in-game problems in creative ways. For example, in the popular *SimCity* games, the player takes the role of a civil engineer who has to balance economic, environmental and social issues while building and maintaining whole cities. Another example is *Lineage*, where the player assumes the role of an international financier, buying and selling goods, trading raw materials, and speculating on currencies.

Consequently, the researchers concluded that video games are more than a source of relaxation, distraction and obvious fun; they are stages for the discourse on cultural, social and political practices and systems that foster conceptual and critical thinking on a wide variety of issues. The literature also revealed the effects of playing video games on knowledge acquisition in a variety of subjects, on cognitive and perceptual abilities, and on emotional responses. This led to the belief that the cognitive complexity of video games requiring multidimensional visual-spatial skills, advanced problem-solving and reading-comprehension capacities might account for the generalised increase of IQ in the population (Sardone & Devlin-Scherer, 2010).

3.3.1. Mission 1: Benefits of playing video games

An increasing number of researches are examining the potential benefits for some cognitive functions and the social benefits of playing video games. Investigations from the early 1980s until today have consistently shown that playing computer games improves hand-eye coordination and increases fine motor skills and spatial reasoning (Gozli, Bavelier, & Pratt, 2014). Video games assisted in the development of language, basic math, basic reading and social skills among special-needs children, and children with attention-deficit disorder showed improvement in attention span, impulsiveness and hyperactivity (Griffiths, 2002). By the same token, Jackson et al. (2012), employing the Torrance Test of Creative Thinking[9], found that kids who played video games (regardless of the type of video game) were more creative than kids who didn't play.

Playing action video games trains people to take the right decision with a 15% reduction in reaction time by developing a heightened sensitivity to what is going on around them (Green, Pouget, & Bavelier, 2007). Video game play also fosters brain plasticity and learning (Bavelier, Green, Pouget, & Schrater, 2012), improves the brain's cognitive function (Oei & Patterson, 2013), provides meaningful stimulation to the human hippocampus (Clemenson & Stark, 2015);

[9] The Torrance Tests of Creative Thinking (TTCT) is a test of creativity that is scored on four scales: fluency, flexibility, originality, elaboration (for more see Torrance, E.P. (1974). Torrance Tests of Creative Thinking. Scholastic Testing Service, Inc)

increases grey matter in the right hippocampus, right prefrontal cortex, and the cerebellum needed for spatial navigation, strategic planning, working memory and motor performance (Kühn, Gleich, Lorenz, Lindenberger, & Gallinat, 2014); improves visual acuity and the ability to find objects in a distracting setting (Green & Bavelier, 2007); and makes dyslexic children read better (Franceschini et al., 2013).

Another group of researchers tracking high schoolers found that children who played sports video games were more likely to play real-life sports in the future. The researchers concluded that sports video games may be an effective tool to promote both self-esteem and participation in sports amongst adolescents (Adachi, Hodson, & Hoffarth, 2015). As for shooter games, Hubert-Wallander, Green, & Bavelier (2011) revealed that shooter games players were better able to filter out distractions whilst engaged in attention-demanding tasks; they were also less distracted by other visual information than non-gamers. Playing 30 minutes of puzzle games (like *Angry Birds*, *Bejeweled*, or *Tetris*) per day has been shown to alleviate symptoms of anxiety and depression at a level that rivals prescription medication (Russoniello, Brien, & Parks, 2009).

Equally important, a recent meta-analysis showed the potential of video games to enhance mental health and well-being in children and adolescents in cognitive (e.g. attention), motivational (e.g. resilience in the face of failure), emotional (e.g. mood management) and social (e.g. prosocial behaviour) domains (Granic, Lobel, & Engels, 2014). A similar meta-analysis revealed that play robustly enhances the domains of top-down attention and spatial cognition, multitasking, and cognitive flexibility (the ability to switch strategies quickly when one's old strategies do not work) (Bediou et al., 2018). In the same manner, Zelinski & Reyes (2009) discussed the cognitive benefits of computer games by different types of game genre for older adults. Furthermore, video games successfully treat amblyopia (also called “lazy eye”) (Li, Ngo, Nguyen, & Levi, 2011) and improve visual contrast sensitivity (Li, Polat, Makous, & Bavelier, 2009). Additionally, Durkin & Barber (2002) found computer games can be a positive feature of healthy adolescence because adolescents who engaged in video game play are better adjusted, are more obedient to parents and have positive mental health, family closeness, higher self-concept, positive school engagement, reduced substance use, activity involvement and an extensive friendship network.

These positive findings encourage more research on the potential of digital games originally developed to produce benefits through entertainment.

3.3.2. Mission 2: Video games as a tool for social change

Prensky (2004) claims that games are the most powerful learning tools ever known and that it is their rich virtual worlds that make games powerful contexts for learning. They are excellent tools for communicating a shared understanding of complex social phenomena. Harmonising the narrative and the game design and by means of, for instance, specific game rules, interaction mechanics, strategic dilemmas game designers can communicate powerful ideas (Latorre, 2010). Furthermore, today's game designers can use this and games' other intrinsic powers to effect positive change in the world (Swain, 2007). Researchers affirm that gameplay brings together fundamental aspects of psychology, sociology and technology to engage people for social change (Patel, 2012). Consequently, some authors see video games as an expressive and persuasive medium, arguing that video games can help further civic engagement and social change in people who play certain video games (Bogost, 2007; Swain, 2014). Todd & Galinsky (2014) reviewed the empirical research, finding that perspective-taking helped tackle the complexities of society, reduce bias, improve intergroup attitudes, and encourage a view of out-groups as more "self-like" and of the self as more "out-group-like". Cohen (2001) claims that by "introducing other perspectives and persuading others to identify with them, new possibilities for understanding are opened that may result in attitude change". Further, when people learn through play, complicated ideas become more accessible and understandable, thus, learning regardless of previous knowledge of the particular topic at hand is enabled. (Sou, 2018). Besides, video games can have several storylines at the same time, presenting players with multiple and alternative narratives about refugees that would be impossible in linear storytelling (Sou, 2018).

Real-world issues with highly emotional events that are not easy to teach might be taught through the lens of immersive, interactive digital games stimulating more easily in this way discussion and lessen the weight of the subject matter (Sardone & Devlin-Scherer, 2010). Game designer Mary Flanagan thinks video games help social and behavioural changes by creating an easy, comfortable atmosphere where good qualities like persistence and the normalisation of failure are developed in an unforced and more natural way and where it is OK not to know an answer and to look for unusual solutions. Flanagan discovered four key ways in which games can make an impact:

1. Video games lead to open-mindedness and disrupt stereotypes (they can inoculate against biases and stereotypes as they are played over and over.)

2. Fictionalisation: the more fantastic and fictional the story, the more effective the message (e.g. zombie games proved to be the most effective game at shifting attitudes and mindsets).

3. Associate: games make new mental associations easier.

4. Rethink: games help rethink perspectives (Flanagan, 2018)

In line with Flanagan, Patel (2012) analysed the effectiveness of real-world games and how they leverage social impact in communities. He concluded:

1. Exploration is safe: players test new patterns of behaviour in a playful and secure environment.

2. Play as catharsis: a unique entry point for role-playing and dealing with difficult issues.

3. Building weak ties that bind: serendipitous interactions between people that build social capital.

4. Linking strategic play to knowledge gains: game elements built around strategic play produce the most measurable learning outcomes.

5. Turning gamers into superconductors: players are turned into successful conduits that spread the message and social content of a game to their families, friends and communities (Patel, 2012).

Moreover, Granic, Lobel & Engels (2014) and Greitemeyer & Mügge (2014) argue that gamers playing prosocial video games are more likely to be engaged in social and civic movements in their everyday lives. Consequently, having real-world impact increases player enjoyment and commitment to gameplay (Bateman, 2009).

3.2.1.1. Empathy games

An increasing number of video game developers, especially indie[10], produce games and virtual realities that aim to increase the general public's awareness of pressing global social issues such as poverty and the refugee crisis. 'Empathy video games' is a term used to designate an emerging genre of video games and also a blanket term for many types of video game that commonly seek to evoke compassion in players by providing an experience that lets them look

[10] Indie game is often made by one person or a small team, without getting money from a well-known publisher.

deeply into the experiences, thoughts and feelings of the game's characters (Wells, 2016). These games have covered a broad range of topics, such as cancer, gender dysphoria, child abuse, poverty, and refugees. Thus, the game "aims at helping to organise and accelerate the adoption of computer games for a variety of challenges facing the world today" (Raessens, 2010).

Thanks to their technological format, video games can construct sophisticated messages combining the social, political, economic and historical factors of the issue at hand. Their distinctive rhetorical power also allows them to produce highly complex narratives while remaining highly understandable and learnable for unfamiliar with social issues players (Sou, 2018). Furthermore, "(game) designers tried to implement values through player actions, rewards, narrative premise and goals, and rules within the environment" (Flanagan & Nissenbaum, 2014).

Migration is a global phenomenon impacting the lives of countless people. Now that the issue of migration has entered the global development agenda, empathy video games aimed at raising awareness and understanding of this global phenomenon might attract different public sectors that may not be traditionally involved in migration issues. The gaming world is emerging as a new medium for social change, bringing closer stories of migrants and refugees, and engaging players in games inspired by real-life refugee experiences. According to Royle (2008), games engage players on three main fronts and might, thus, help to improve public understanding about migration. First, the structure of the game motivates the player and makes them want to solve problems merely for the sake of doing so. Second, there is a narrative or backstory that makes the engagement believable or authentic. Finally, thanks to characterisation, the player believes in their role in the narrative, becoming fully engaged in the game.

Digital games' potential to positively impact attitudes is rooted in their ability to grant perspective (Darvasi, 2016). This is another aspect of empathy games' design that deals with the mentality of users. Part of the process of perspective-taking involves openness—to embrace and consider other perspectives, there is a need to value them first (Farber & Schrier, 2017). Perspective-taking in video games involves players adopting the perspective of another identity (in-game character) and gaining a glimpse into that identity's motivations behind their actions. This offers an opportunity for players to come into contact with points of view that they would never have imagined otherwise while still being able to weigh these views against their own beliefs. And games not only allow players to glimpse characters' internal perspectives and to explore their feelings and motivations, they also let players look at the world through the characters' external perspectives by having them assume roles they could never have imagined for themselves (e.g. in *Mass Effect 2*, players take the role of a legendary spaceship commander,

while *Golden Sun: Dark Dawn* lets them be a brave warrior with incredible magical powers) (De Luna, 2012). Darvasi (2016) explains that perspective-taking often involves actively taking into account people who at first appear very different (members of an "out-group") by, for instance, embodying their "mental state, points of view, and motivation".

Games are especially fit well for educational or activist programs where empathy is a key method or goal. This is because of their unique immersive way that allows players to inhabit the perspectives of other people or groups (Belman & Flanagan, 2010). Guillén-Nieto & Aleson-Carbonell (2012) tested if the serious game *It is a Deal* helped develop intercultural communication and raise intercultural awareness, reporting a small learning effect on intercultural awareness, a medium effect on intercultural knowledge, and a substantial effect on intercultural communicative competence. Lane & Ogan (2009) reviewed six virtual learning environments built to support the acquisition of cultural knowledge that cover different cultures (Spanish, Chinese, Iraqi, Dari, Pashto, and French): *Croquelandia*, *ATL*, *Second China*, *TLCTS*, *BiLAT*, and *VECTOR*, all of which use immersive technologies such as *Second Lif*e or the *Unreal Tournament* engine. They concluded that virtual learning environments might support the acquisition of cultural knowledge and communication skills. Lane et al. (2008) confirmed that *BiLAT* is effective for the teaching of social-cultural conventions. Barr (2017) confirmed that certain commercial games are effective in raising communication skills. Pandey, Pandey, & Shreshtha (2007) explored *Age of Empire*, *Rise of Nations* and *Rise of Nations: Thrones and Patriots*, finding that these games are indeed helpful in developing cultural literacy and accessing codes of cross-cultural citizenship. In the same line, Smith & Deitsch (2007) confirmed the development of sociocultural literacy. Toscano (2011) explored how multimodal literacy can be developed through video game play. Anderton & King (2016) described how the role-playing game *Oblivion* contributes to expanding cultural empathy and exploring personal bias.

In the same vein, Alhabash & Wise (2012) confirmed the positive effects of *Peacemaker* on changing students' explicit and implicit attitudes towards foreign nations. Behm-Morawitz, Pennell, & Speno (2016) reported greater support for pro-minority policies and the stimulation of perspective-taking regarding African American men after virtual racial embodiment was used to reduce bias against a non-dominant group in *Sims Social*. Belman & Flanagan (2010) discussed the heuristic principles of three exemplary games—*PeaceMaker*, *Hush*, and *Layoff*—for their power to engage players' capacity to empathise innovatively. Sou (2018) concluded that the serious refugee games *Frontiers: Welcome to Fortress Europe*, *Cloud Chasers: Journey of Hope* and *Against All Odds* may be viewed as a response to current problems with the way refugees are

represented in traditional media. Neys & Jansz (2010) showed that *Airport Security*, *Darfur is Dying*, *McDonalds Game*, *Peacemaker Game*, *September the 12th* and *Super Columbine Massacre RPG* had a positive impact on respondents' knowledge of and opinion about the political issues addressed in these games, with a quarter them expressing a desire to obtain more information about the issues and more than half saying they were motivated to communicate with friends about the issues or to stimulate them to play the games.

Gentile et al. (2009) reported positive effects on prosocial behaviour from playing *TY2*, *Crash Twinsanity*, *Chibi Robo*, *Super Mario Sunshine*, *Pure Pinball*, and *Super Monkey Ball Deluxe*. Happ, Melzer, & Steffgen (2013), after testing *Mortal Combat vs DC Universe* and *Superman vs Joker*, shared that empathy and prosocial behaviour (willingness to help strangers) can be influenced when players adopt the avatar of the comic hero Superman. Inhabiting the body or occupying the avatar of a superhero led to positive results as evidenced by participants' pro-social and helpful behaviour in the experiments with virtual reality simulations conducted by Ahn, Le, & Bailenson (2013) and Rosenberg, Baughman, & Bailenson (2013). Lenhart, Kahne, Middaugh, Macgill, Evans &Vitak (2008) showed that games with civic experiences (e.g. *Guild Wars 2*, an MMORPG) led adolescents to be more engaged in social and civic movements in real life (e.g. raising money for charity, volunteering). Peng, Lee, & Heeter (2010) found that participants who played *Darfur is Dying* showed a willingness to help the population of Darfur after the game.

The cultural diversity leads to the promotion of multiculturalism, which "aims to achieve social cohesion through an environment where diverse cultures are recognised and valued" (Liu, Volcic, & Gallois, 2014). Empathy video games, with their ability to raise awareness and promote perspective-taking in a trendy way, might help negotiate social complexities, better inter-group attitudes, diminish biases, and encourage a view of out-groups as more self-like (Todd & Galinsky, 2014). With this potential, researchers hope to utilise these social aspects in local, smaller-scale educational environments for intercultural, diverse and inclusive education.

3.3.3. Mission 3: Video games as a tool for teaching and learning[11]

Technological advances provide new benefits and present challenges that can impact education. Educators today have to rethink and reshape their practice to respond to the demands of a rapidly changing wired world. Because of their commercial success, computer games have

[11] This part entered in Shliakhovchuk, E. (2019) Playfulness and Seriousness: The Power of Video Games to Teach and Enhance Cultural Intelligence (CQ). Chapter1 In Challenges and Opportunities in Global Approaches to Education. Editors: Theresa D. Neimann, Uta Stelson. IGI Global, doi: 10.4018/978-1-5225-9775-9

captured the attention of educators and training professionals. Some are concerned about the intensity of involvement and the amount of time youngsters dedicate to playing computer games Some, like Zimmerman (2013), suggest that we are witnessing the dawn of the *"ludic century"*, where game-like experiences will increasingly shape art, design, entertainment, commerce and education. Especially over the last ten years, a large body of studies investigating and documenting the potential of information technology and particularly video games as a tool for learning has begun to emerge.

A current professional interest in digital games is based on the idea that games can be effective tools for enhancing learning and the understanding of complex subject matter (Garris, Ahlers, & Driskell, 2002). Video games have so far been used in education mainly for their inherent potential for producing learning (Gee 2003), an approach supported by facts. Firstly, there has been a major shift from the teacher-centred "learning by listening" approach to a learner-centred one in which students play a more active role and learn by doing. Secondly, the development of new interactive technologies provides an opportunity to actively involve students in problem-solving. Finally, serious video games have a tremendous capacity to capture students' attention and engage them in curricular content (Garris et al., 2002). Learning in virtual worlds doesn't confront words and symbols from the things those words and symbols are about (Shaffer, Squire, Halverson, & Gee, 2005). At this instant, video games are considered a particular interactive multimedia tool for instruction. Not surprisingly, then, computer games are being increasingly incorporated into classroom education, healthcare, government, science and technology, hospitality and catering, financial services, telecommunications, corporate and military trainings.

Mayo (2007) examined the use of video games effective learning paradigms in professional and educational contexts, finding potential advantages of such use that include: (a) massive reach, (b) experiential learning (learning by doing; the option to "Try Again" after receiving a failing grade ("Game Over")), (c) inquiry-based learning (free-form exploration, discovery, and experimentation are encouraged in pursuit of an overall goal), (d) self-efficacy (points, levels, or magic swords are awarded at positive decision points, encouraging players to keep going), (e) goal setting (all games have goals), (f) cooperation, (g) continuous feedback, (h) enhanced brain chemistry, (i) time on task (time pressure), (j) tailored instruction, (h) cognitive modelling, etc.

Playing is educational as it familiarises players with ways of being and doing that they would otherwise not know about. A challenging, engaging, entertaining, believable video-game world could develop skills and knowledge for use in other arenas. The outcome of playing the

game will be an achievement, but the very process of playing will have accomplished much more. As Mayo (2009) pointedly states, “complex tasks are presented first as a small core experience that is practised multiple times before being progressively extended into a longer, more complex sequence”. This results in the gradual building of new skills based on previously learned skills. With this in mind, it is important to admit the role of computer games as a tool for learning. “Digital games have significant educational value, particularly in the area of literacy” (Apperley & Walsh, 2012).

The potential of game-based learning is augmented by designing intrinsically motivating games, offering dynamics that naturally require situated, relevant learning. The design of video games is often focused upon a number of fundamental principles to motivate players to spend time on task mastering the skills a game imparts. The literature reveals that a number of distinct design elements necessary to stimulate desired knowledge gains. The most highlighted are: (1) a clear and specific goal: (e.g. capturing the princess, reaching a destination); (2) adequate level of complexity: not too low but not too high, either; well-designed games are highly challenging and are rarely totally mastered; (3) high speed of course of event; (4) incorporated instructions; (5) independence from physical laws (objects and characters fly, spin, change shape or colour as they please; and (6) holding power: (a microworld with its own rules and regulations) (Rosas et al., 2003; Dondlinger, 2007)

There are even some though provoking Ted Talks that go over some of the positive effects of video games. Gabe Zicherman talks about how the new gaming culture is making kids smarter, and Daphne Bavelier discussed the psychological effects of video games. The topic is gaining so much attention that a talk on “Game Changers: Playing Games for Good” was presented by Mary Flanagan in the panel discussion on the future of work at the 2018 World Economic Forum in Davos, Switzerland.

In effect, digital games-based learning (DGBL) and twenty-first-century skills have been receiving an enormous amount of attention from researchers and practitioners (Qian & Clark, 2016).

3.3.4. Mission 4: Video games as a tool for acquiring the twenty-first-century skills

The potential of digital games to enhance the effectiveness of training and learning is a subject of debate in the field of learning over recent years (Guillén-Nieto & Aleson-Carbonell, 2012). Traditional education, with its superficial coverage of material, often makes it difficult for students to organise information in meaningful ways, and it fails to prepare learners for real life

(Bransford, Brown & Cocking, 2000). Today's knowledge-based global economy and the continuous changes that are taking place across the world demand a skill set that is different from the past. The skills that are needed today go beyond information and communication technology (ICT) literacy. They require creativity, productivity in a globalised world, communication, collaboration, conflict management, problem-solving, social and cultural skills, learning to learn skills, self-direction, critical thinking, planning, risk-taking, flexibility and a sense of initiative and entrepreneurship (Romero, Usart, & Ott, 2015). School pupils, as well as lifelong learners, should develop these twenty-first-century skills in both formal and informal learning settings.

Drawing on the literature on digital games from the last decade, three reasons stand out particularly that speak in favour of increasing the use of video games in education:

(a) they use actions to create personal motivation and satisfaction;

(b) they accommodate multiple learning styles;

(c) they foster decision-making and problem-solving activities (Mettler&Pinto, 2015).

To sustain the development of twenty-first-century skills, modern learning theories reached the understanding that effective learning happens when it is active, problem-based, allows a trial-and-error strategy, and has a random element of surprise and a feedback system. Thus, players and educators alike have recognised the role of video games as a tool that encourages the transfer of learning, trains in logical thinking, improves imagination, and teaches cooperation with other people. Moreover, games teach systems thinking, strategic problem-solving, and interpretative analysis, thereby contributing to the acquisition of business skills and influencing the moral and mental development of youth. The game-based learning approach is widely used, most notably in health, business and social-curriculum areas. Thirty-seven per cent of game-using teachers report digital games as being effective in improving students' social skills, and 79% of game-savvy teachers say that video games teach students twenty-first-century life skills (Takeuchi & Vaala, 2014). Games accomplish this by accommodating a variety of learning styles within a complex decision-making context (Squire, 2006).

> Games require the kind of thinking that we need in the 21st Century because they use actual learning as the basis for assessment. They test not only current knowledge and skills but also preparation for future learning. They measure 21st Century skills like collaboration, innovation, production, and design by tracking many different kinds of information about a student, over time (Gee & Shaffer, 2010, p. 10, cited in Mcclarty et al., 2012)

Well-designed games expose players to complex tasks, make them interact with others, and provide timely feedback that is seamlessly integrated into the learning experience. Digital

games offer complex worlds in which individuals can playfully explore and experiment, repeatedly fail, and ultimately succeed, enhancing the drive to level up, and building on-the-road collaboration, communication, and creativity. In these immersive game environments, players have to exercise critical thinking and take important decisions under time constraints and other pressures mimicking those in real life. Modern video games are difficult to master and require players to be skilled at recognising patterns, making sense of unfamiliar environments, multitasking, and to some extent, taking risks. Gaining mastery requires learning from mistakes. Virtual worlds facilitate the development of communication, cultural, and decision-making skills (Lane et al., 2008). Strategy games are known for their contribution to planning, flexibility, and adaptability skills (Frederick, Corvetto, Hobbs, & Taekman, 2011). In addition, playing video games triggers intense positive emotional experiences (McGonigal, 2011). It also develops inductive reasoning and engages students in learning (L. A. Annetta, Minogue, Holmes, & Cheng, 2009), and when engagement increases, so do learning outcomes improve.

Boyle et al. (2016) undertook an extensive systematic literature review of empirical evidence about the positive impacts and outcomes of digital games and how they can engage players and support learning and skill acquisition. The findings revealed that playing digital games is linked to a range of perceptual, cognitive, behavioural, affective and motivational impacts and outcomes. In a like manner, Qian & Clark (2016) examined the literature on game-based learning connected with students´ acquisition of twenty-first-century skills. They reported creativity, critical thinking, collaboration and communication abilities as learning outcomes, with critical thinking skills being the most frequently investigated outcome. In the same fashion, Connolly, Boyle, Macarthur, Hainey, & Boyle (2012) presented their findings that digital games had a positive impact on problem-solving skills, motivation, and engagement. As Kondrat (2015) writes, “video games train for a logical way of thinking, teach cooperation with other people – players, create and improve their imagination”.

Engaging in complex thinking fosters problem-solving and collaboration, which are important twenty-first-century skills (Mcclarty et al., 2012). Instead of learning through explicit linear instruction like reading descriptions, players experience situations, solve problems using trial and error, and recursively collect evidence which they test through experimentation (Prensky, 2006). In-game puzzles vary in complexity and usually give very little advice on how to solve in-game problems, leaving players to explore a huge range of possible solutions based on intuition and experience (Granic et al., 2014). Players have to think systemically and consider relationships instead of isolated events or facts; they must apply and adapt their knowledge to varying situations. Moreover, problem-solving skills are supported by the system of rapid

feedback on the results of the players' actions. A good example of an AAA entertainment game that provides extensive experience in problem-solving is the *Civilization* series, which requires players to lead a civilisation from 4,000 BC to the present, manage complex economies, seek out geographical resources, and hold diplomatic summits to deal with other nations (Spires, 2008).

Collaboration is game-design elements used to engage players in social interactions and is the most frequently targeted game design element that leads to persistence in gameplay (Qian & Clark, 2016). Massively multiplayer online role-playing games (MMORPGs like *World of Warcraft* or *Everquest 2* present challenges that encourage collaborative problem-solving, allowing players to develop twenty-first-century skills (Qian & Clark, 2016). *World of Warcraft* boasts 12 million regular players, and in this virtual social community, players need to decide how to effectively lead groups of people, coordinate avatars, and choose whom to trust and whom to reject. As a result, they rapidly learn social skills that might be brought outside the gaming environment (Gentile et al., 2009). Playing a violent video game cooperatively, compared with competitively, increases subsequent cooperative behaviour outside the game context and makes players more cooperative with out-group members, thus helping to overcome the effects of out-group membership status (Velez, Mahood, Ewoldsen, & Moyer-Gusé, 2014). Beck & Wade (2004) went further and framed the characteristics of gamers—rapid analysis of new situations, interactions with unknown characters, quick and independent problem-solving, strategic thinking in a chaotic world, and effective collaboration in teams—within the context of the needs of the twenty-first-century workplace. Also, the gaming generation is bottom-line orientated, as it wants metrics and to see its performance assessed with a meaningful unit of measurement (Mcfarlane, Sparrowhawk, & Heald, 2002)

Furthermore, Nino & Evans (2015) concluded that video games to some extent shape players' knowledge, helping them gain new perspectives on themselves and their view of the things they already know. Bourgonjon et al. (2016) write that video games "offer a perspective on how other people interpret specific problems, dilemmas, and situations in life and suggest potential ways of dealing with them".

In summary, once video games were taken out of the category of simply childish and dangerous and were later acknowledged as a normal part of the lives of millions of people, a flourishing body of research emerged aimed at assessing the effects of games on the competencies and abilities connected to twenty-first-century skills.

3.3.5. Mission 5. Cultural literacy as a learning outcome of playing video games

Squire (2006) views the growing interest in next-generation digital games as a manifestation of the shift towards a culture of simulation in which digital technologies allow the exploration of different environments. Video games could provide compelling experiences for creating engagement towards intercultural education as they require active participation and possess the remarkable potential to engage players in contexts and problems entailing complex dynamics wholly. Moreover, the epistemological shift towards constructivism fuelled the emergence, cultivation and development of interactive learning environments where learners have opportunities for exploration and manipulation to foster the construction of knowledge (Dickey, 2007).

Conversely, Koster (2015) argues that video games teach us that which can be absorbed by the subconscious, as opposed to that which is designed to be taken in by the conscious, logical mind. Thus, intentionally or otherwise, video games are the developers' route into perpetuating their own existing stereotypes. Provenzo (1991) thinks that video games reflect what is going on in culture and society, as well as attitudes towards gender, race, and ethnicity. Gee (2003) adds that video games make implicit cultural assumptions that players are unable to influence. As an example, in Joystick Nation, Herz (1997) points out that "*SimCity favours public transportation because Will Wright is a proponent of public transportation …*". Thus, video games are full of embedded biases and assumptions, and these stereotypical images and messages may affect gamers. In fact, over time, these existing stereotypes have the ability to alter gamers' thoughts and offline behaviour (Burgess, Dill, Stermer, Burgess, & Brown (2011). Games are good at objectification, while stories are good at empathy, says Koster (2015), comparing video games and stories. As a result, numerous critics remain concerned about the interactivity of video games and their impact on gamers. Gee (2003) argues that it is very important to critically evaluate video games and the identities and cultural values they promote.

Most of us are well aware that globalisation and worldwide connectivity are moving ahead at breakneck speed (Livermore, 2009). When working and living in a growing multicultural community, one needs to acquire intercultural knowledge and skills in order to succeed in today's rapidly shifting modern realities. Gee (2003) justified 36 learning principles of video games and described how video games could serve to develop an understanding of cultural modes by immersing players in a particular cultural worldview. In the same vein, Bogost (2011) states that one of the unique properties of video games is their ability to put players in someone else's shoes. Similarly, Facer, Furlong & Furlong (2003) argue that computer games seem to be an instrument for allowing players to discover and model various ways of

being, “to imaginary inhabit alternative realities”). Bourgonjon et al. (2016) add that video games “offer a perspective on how other people interpret specific problems, dilemmas, and situations in life and suggest potential ways of dealing with them”.

This thesis aims to fit in with the global trend of using video games and game-based learning to educate on a wide range of topics. IQ, EQ, cultural intelligence—or cultural quotient (CQ)—have taken on new meaning in the shifting realities of our rapidly globalised world. Today’s increased connectivity across countries, cultures, and individuals requires people to work hard at developing and fine-tuning their twenty-first-century skills, including cultural literacy, to face and deal with the economic and political challenges of this century.

The objectives of this thesis is to examine how video games contribute to cultural literacy acquisition and to present an overview of the well-documented research supporting the impact of video games on cultural literacy improvement. Video games are commonly known to be socially interactive means for players to interact online with family, friends and strangers, often across vast geographical distances. This interaction blurs cultural boundaries, age and generation gaps, socioeconomic differences, and language barriers. Many games that might support intercultural skills are based on communication. Virtual worlds where the players can interact with other players or with virtual characters might support not only the development of social and cultural skills but also communication and intercultural skills as meta-skills (Romero et al., 2015). The following chapters Four, Five and Six will investigate this in some details.

3.4. Summary of Chapter Three

Two and a half billion people play video games, be they casual games played on a mobile phone or serious games played on a console. They are more popular now than ever before, with video game characters even gaining icon status in popular youth culture. “Games have sometimes been praised or demonised, often without real data backing up those claims. Moreover, gaming is a popular activity, so everyone seems to have strong opinions on the topic” (Palaus, Marron, Viejo-Sobera, & Redolar-Ripoll, 2017, cited in Nichols, 2017). The research conducted on video games’ impact over the past decade has greatly helped our understanding of their multiple effects on users and that these effects can be used as educational potentials (in or out of the classroom).

The aim of this chapter was to examine the factors contributing to the sudden growth of the field during the more than thirty years of video game’s impact on players research and to discuss the main directions of the research outlining the gap this thesis aims to fill.

Chapter Four: Intercultural perspective on the impact and outcomes of video games

"'They [the public] see children taught by games in the classroom as bad, yet pilots taught by a simulator as good–what's the difference between a simulation and a game?"

Adam Singer

Today, real-life experience blends with the virtual, and the virtual contributes to how we experience the real (Penix-Tadsen, 2013). Video games give people the chance to live in new cultures and potentially create their own multicultural culture. So, what role do video games play in people's need to acquire the rules of living, learning and working cross-culturally in the transnational spaces occupied by the rapid global movement of people (Pandey, Pandey, & Shreshtha, 2007)? Racially offensive depictions of minority groups in video games such as Blacks, Asians, Arabs and Jews, requires similar concern (Everett & Watkins, 2008). Thus, scholars are broadening their questions, wondering whether content features make players more violent and less tolerant of the culturally ¨other¨, whether cultural ideas built into video games promote stereotypical thinking, and whether video games add to gamers' intercultural education.

Online games, as various scholars have said, are not mere diversions, but *"new communications technologies", "forums",* or entire *"societies"* (Brown, 2008; 2014). Computer worlds are immersive environments that allow active role play that can be used to deconstruct stereotypes and enable people to experience new cultures interactively. Gee (2003) argues that the figured worlds players come into contact with in their games strongly influence their worldviews, either reinforcing or questioning them. Hayes (2007) points out that worldviews are often taken for granted and unquestioned until they are juxtaposed with other frames of interpretation.

Considering the abovementioned potential benefits of video games for intercultural education, it is unfortunate that there is no proper evidence of their effectiveness and learning gain, as this is one of the barriers preventing video games from being widely adopted in intercultural, diversity and inclusive education (Mortara et al., 2014). Scholarly research, however, is aware of this, and has been devoting glowing attention to video games' potential for teaching gamers cultural assumptions and about stereotypes (Near, 2013). This systematic literature review (SLR) aims to contribute to the body of evidence supporting the potential of

both entertaining and serious video games for teaching and learning across intercultural, diversity and inclusive education. The detailed articles selection process for inclusion in the present SLR in described in section 1.3 of this thesis.

4.1. Data analysis

4.1.1. Categorisation

The categories were defined by the primary purpose of the games. Serious games are developed for educational purposes. Entertainment AAA (pronounced "triple-A") games are produced and distributed by mid-sized or major publishers, have higher development and marketing budgets, and are for entertainment purposes. Simulation video games are designed to simulate real-world activities or situations for training, analysis, or prediction purposes. Simulation video games in many cases could be included in the serious-games category. Some papers included in this research dealt with immersive virtual environment technology (IVET). Thus, serious games using IVET are shown as a separate category reflecting the academic world's interest in IVET in their experiments, especially since 2013.

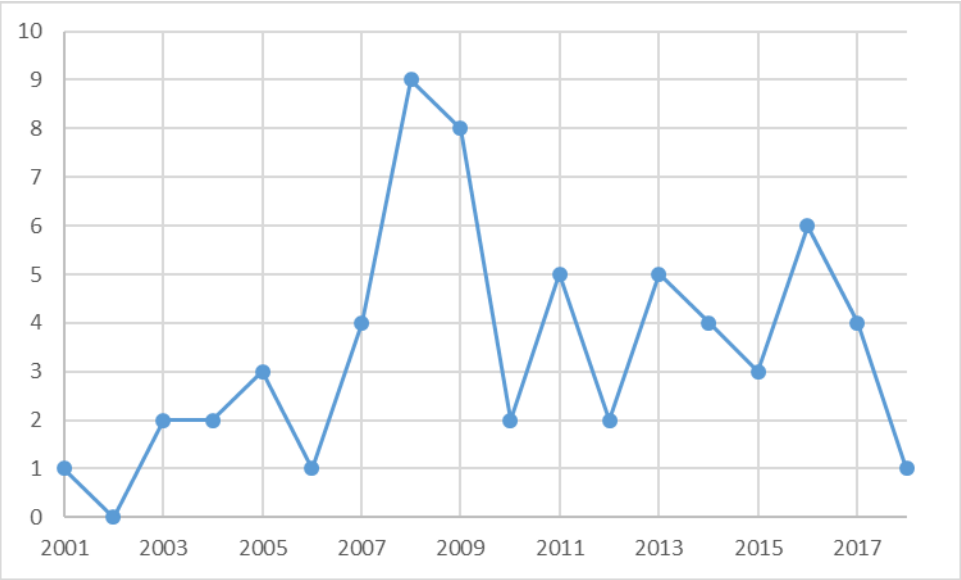
For the discussion of outcomes and impacts, the following categories are used: behavioural change outcomes, content understanding outcomes, knowledge acquisition outcomes, and perceptional outcomes. If a game designer purposefully built some learning outcomes into the game, it is considered to have obtained its intended outcome. Unintended outcomes are outcomes which are not purposefully built into the game.

The research design used in the study, categorised as a randomised control trial (RCT); quasi-experimental; or correlational or qualitative design and content analysis.

4.1.2. General analysis

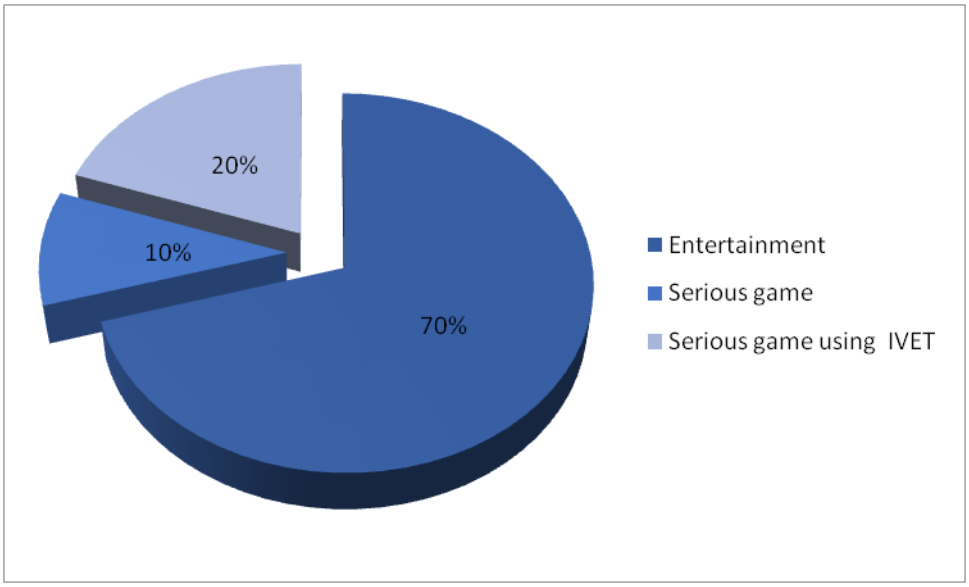
A relatively stable interest in video games from the intercultural, diversity and culturally inclusive points of view starts at the beginning of this decade. More than 5,300 participants aged 10 to 45 took part in thirty-six experiments reporting positive behavioural change, knowledge acquisition and perceptional outcomes. Around 1,000 video-games titles were studied, ranging from top-selling games (e.g. *World of Warcraft*) to virtual-reality simulations (e.g. *Second China*), from major video-game producers (e.g. *Electronic Arts*) to university projects (e.g. *virtual racial embodiment*). Figure 4 suggests an overall trend based on the number of publications per year in research from the intercultural point of view; the *y*-axis presents the number of studies and the *x*-axis the year of publication.

Figure 4 Overall trend in intercultural research on video games



Most of the papers used AAA entertainment titles in their research (70%). Ten per cent of papers researched serious games: *Peacemaker* (Alhabash & Wise, 2012; Cuhadar & Kampf, 2014), *Darfur is Dying* (Bogost, 2011; Peng et al., 2010), *It Is a Deal* (Guillén-Nieto & Aleson-Carbonell, 2012), and *Real Lives* (Crogan, 2008). Twenty per cent of papers used immersive virtual environment technology (IVET) for their analysis (Ahn, Le, & Bailenson, 2013; Banakou, Hanumanthu, & Slater, 2016; Behm-Morawitz, Hoffswell, & Chen, 2016; Gamberini, Chittaro, Spagnolli, & Carlesso, 2015; Hasler, Spanlang, & Slater, 2017; Peck, Seinfeld, Aglioti, & Slater, 2013; Rosenberg, Baughman, & Bailenson, 2013; Kors, Ferri, Van Der Spek, Ketel, & Schouten, 2016; Lane et al., 2008; Lane & Ogan, 2009). Figure 5 suggests various game genres used in studies.

Figure 5 Games genres used in the research split by purpose (in percentage)



Entertainment AAA games get most of the attention from researchers, as is to be expected since this type of games has the widest audience. However, serious games using immersive virtual environment technology (IVET) may well be a newly developing trend in research. Since 2013 the number of researchers using immersive virtual reality in their studies has been increasing, a trend which is likely to continue. The launch of *Oculus Rift*[12] in 2013 is making virtual reality more and more affordable to a wide audience for entertaining, educational and training purposes.

It is worth noting that video games are increasingly difficult to categorise by purpose only. Some entertainment AAA games offer to use their games for educational purposes, the most successful example being *CivilizationEDU*, a part of the *Civilization* series, which was launched in 2017. At the same time, some educational simulators, like *Real Lives*, enjoy high development and marketing budgets. The category of games known as edutainment, which includes *Kahoot!* or gamified learning platforms like *Duolingo*, engage both entertainment and educational elements, highlighting the lines separating the purposes of games are often blurred, and the current categorisation of games by purpose needs to be reconsidered in a very near future.

4.1.3 Study design analysis

Content design (24) was found by this review (see Table 1) to be the most popular study design used in studies of both entertainment and serious games. Quasi-experimental design (16), less rigorous than RCTs, were also used, including a number of studies that were like RCTs but without a pre-test or randomly assigned task. Quasi-experimental design worked well for entertainment, serious, and IVET simulation games. RCTs (10) were adopted to test skill acquisition and game-based learning, mostly for entertainment games. Qualitative analysis (10) worked well to explore entertainment games, and two correlational game designs were used to explore knowledge acquisition and perceptional change in the serious game *Peacemaker* and to test if embodiment into a dark-skinned virtual body could decrease racism.

Content analysis, therefore, is the most commonly used study method. RCT, quasi-experimental, and qualitative designs are used with equal frequency to test behavioural change, knowledge acquisition and perceptional outcomes. Qualitative design was used to test various outcomes.

12 Oculus Rift is a head-mounted device that provides virtual reality for the wearer

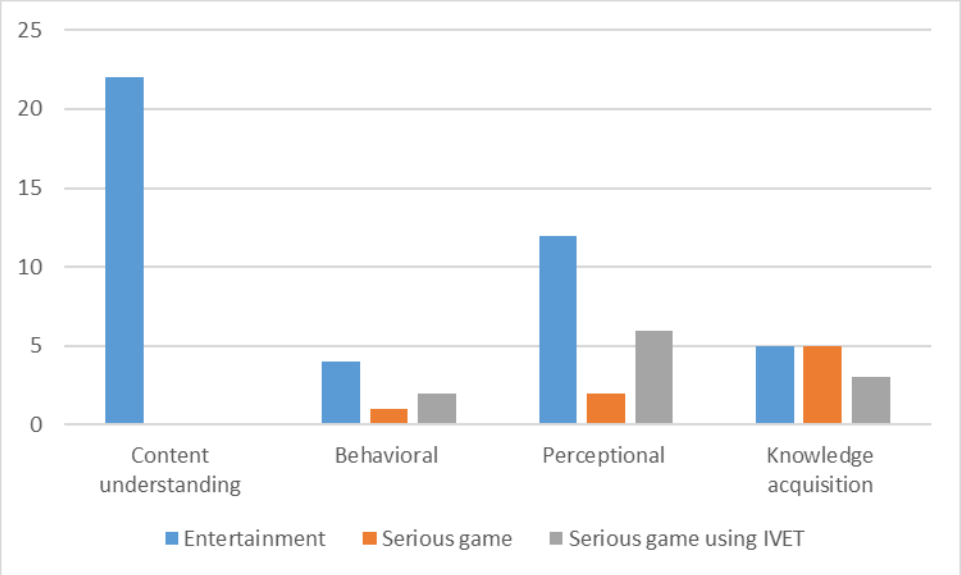
Table 2 Number of experiments of different types included in the relevant papers

Study design	Game type			Total
	Entertainment	Serious games	Serious games using IVET	
Qualitative	8	1	1	10
Correlational	0	1	1	2
Quasi-experimental	8	2	6	16
RCT	7	2	1	10
Content analysis	20	1	3	24
Total	**43**	**7**	**12**	**62**

4.1.4. Outcome and impact analysis

A variety of outcomes were investigated. Figure 6 shows outcomes in a number of papers with the games categorised by purpose. A large number of studies investigated entertainment games for content understanding, behavioural change, perceptional, and knowledge acquisition outcomes. Content understanding (22) is the mostly found outcome, followed by perceptional (20), knowledge acquisition (13) and behavioural change (7).

Figure 6 Outcomes by game genres



Cuhadar & Kampf (2014) reported both knowledge acquisition and perceptional change outcomes, but as the authors reported stronger evidence of knowledge acquisition in their study of the serious game *Peacemaker*, we placed them in the knowledge-acquisition outcome category. The content understanding outcome was mainly reached by content analysis study design; perceptional outcome employed all types of study design; knowledge acquisition outcome employed qualitative, quasi-experimental and content analysis; and behavioural change outcome favoured RTC and quasi-experimental study designs (Table 3).

Table 3 Learning outcomes by study design

Learning outcome	Study design					Total
	Qualitative	Correlational	Quasi-experimental	RCT	Content analysis	
Content understanding	1	0	0	0	21	22
Behavioural change	0	0	2	5	0	7
Perceptional	6	1	4	5	4	20
Knowledge acquisition	5	1	3	0	4	13
Total	**12**	**2**	**9**	**10**	**29**	**62**

4.1.5. Behavioural change outcome

Seven articles reported behavioural change outcomes (Table 4). Changing of behaviour to pro-social and helpful, and treating out-group members as in-group members were accomplished by embodied experience in immersive virtual reality (IVR) (Ahn, Le, & Bailenson (2013); Rosenberg, Baughman, & Bailenson (2013); Hasler, Spanlang, & Slater (2017)) and by playing video games with prosocial content, like *Chibi Robo* and *Super Mario Sunshine* (Gentile et al. (2009) and *Darfur is Dying* (Peng et al., 2010). Increased sensitivity toward outgroup members and increased communication ability, adaptability, and resourcefulness were reported after embodiment in IVR (Ahn et al., 2013) and by playing games like *Borderland 2, Minecraft,* and *Papers, please* (Barr, 2017). Five studies adopted the RCT design, with quasi-experimental being second popular. All authors reported positive outcomes of their studies.

Table 4 Behavioural change outcome

Outcomes	Author
Pro-social behaviour (willingness to help strangers)	Ahn, Le, & Bailenson (2013); Gentile et al. (2009); Happ, Melzer, & Steffgen (2013); Rosenberg, Baughman, & Bailenson (2013); Peng et al. (2010)
Increased sensitivity toward outgroup members	Ahn et al. (2013)
Increased communication ability, adaptability, resourcefulness	Barr (2017)
Treating out-group members as if they were members of the in-group	Hasler, Spanlang, & Slater (2017)

4.1.6. Content understanding outcome

The number of papers that addressed the content understanding outcome is 22. 68 % of papers reported small-scale, 18 % reported middle-scale and 14 % reported large-scale content analysis. Most of the papers used content analysis design for their research, except Brock (2011), who used qualitative research design to examine gamers' reactions to a developer using

Africans as enemies in a survival horror video game, *Resident Evil 5*. The majority of authors drew their conclusions based on their studies of entertainment AAA titles and top-selling games. Passmore, Yates, Birk, & Mandryk (2017) examined 80 indie game titles. The majority of authors did a content analysis of top-selling entertainment AAA games like *EverQuest* and *World of Warcraft* (Higgin, 2009), *NBA, NFL Street, Madden 2003* (Leonard, 2004), and *Civilization III* (Chen, 2004). Behm-Morawitz (2017) conducted a systematic content analysis of 383 US magazine advertisements, and Burgess et al. (2011) did a content analysis of the top-selling video game magazine and 149 video game covers. Table 5 summarises the content understanding outcome.

Table 5 Content understanding outcome

Main findings	Author
Lack of racial diversity. Minority groups are underrepresented and are added for visual variety.	Adams (2003); Burgess et al. (2011); Glaubke et al. (2001); Friedberg (2015); Mou & Peng (2009); Passmore et al. (2017); Williams, Martins, Consalvo, & Ivory (2009); Behm-Morawitz (2017); Dill, Gentile, Richter, & Dill (2005)
Minority groups are portrayed in a stereotypical negative light and have a certain role within a game (e.g. black as criminals or sports stars, Asian as ninjas or martial-arts experts, Mexicans as illegal immigrants, Arabs and Muslims as enemies and terrorists, etc.).	Behm-Morawitz (2017); Brock (2011); Burgess et al. (2011); Magnet (2006); Dickerman, Christensen, & Kerl-McClain (2008) Glaubke et al. (2001); Leonard (2004); Šisler (2008); Higgin (2009); Everett (2005)
The cultural framing is hegemonic. White privilege and Eurocentrism. White male protagonist conquers, explores, exploits, and solves.	Brock (2011); Higgin (2009); Dietrich (2013); Leonard (2003); Harrer (2018); Everett & Watkins (2008);
Animosity between certain races and alignments simulates intolerance; it also promotes cooperation between the seemingly hostile races, and it teaches the value of diversity.	Brown (2008,2014)
Problematic values and assumptions built into the game. The game allows certain technological and cultural choices but not others.	Chen (2004)
Some cultures, identities and stories are misrepresented. Living room couch serves as an arena for *´contemporary commodity racism.´*	Harrer (2018)

4.1.7. Knowledge acquisition outcome

Thirteen studies were identified in this category (Table 6). Lane & Ogan (2009) and Diehl & Prins (2008) adopted content analysis; first, to explore if serious games *Croquelandia*, *ATL*, *Second China*, *TLCTS*, *BiLAT*, and *VECTOR* support cultural knowledge acquisition, and

second, to indicate how intercultural literacy and cultural identity are constructed in the virtual world of *Second Life*. Deaton et al. (2005) and Zielke et al. (2009) used content design to test how serious games using IVET help to acquire culture-specific knowledge. Lane et al. (2008), Guillén-Nieto & Aleson-Carbonell (2012) and Froschauer, Seidel, Gärtner, Berger, & Merkl (2010) used quasi-experimental study design to examine if serious games *It Is a Deal*, *BiLAT* and *ICURA* help to develop intercultural understanding, raise intercultural awareness, and learn culture and etiquette. Cuhadar & Kampf (2014) studied serious game *Peacemaker*, reporting strong knowledge acquisition outcomes in all four groups tested. Other authors used qualitative study design to investigate AAA entertainment games like *Age of Empires*, *Rise of Nations*, *Rise of Nations: Thrones* and *Patriots* (Pandey et al., 2007) and *The Elder Scrolls IV: Oblivion* (Anderton & King, 2016), except for Crogan (2008), who concluded that the educational simulator *Real Lives* enhances understanding of global world processes. All authors reported positive outcomes of their studies. Pandey et al. (2007), Toscano (2011) and Smith & Deitsch (2007) interviewed gamers to explore the role of gaming in sociocultural literacy acquisition. Table 5 summarises the knowledge acquisition outcome.

Table 6 Knowledge acquisition outcome

Learning outcomes	Author
Increased cultural expertise in a specific culture.	Deaton et al., (2005); Froschauer et al. (2010); Zielke et al. (2009)
Virtual learning environments might support the acquisition of cultural knowledge and communication skills.	Lane & Ogan (2009)
Increased level(s) of self-awareness, understanding, and cognitive and cultural empathy for others. Ease of navigating unfamiliar cultural systems.	Anderton & King (2016)
Improved knowledge of culturally related phases in meetings (guided learning).	Lane et al. (2008)
Enhanced intercultural literacy. Cultural identity construction shifting took place.	Diehl & Prins (2008)
A substantial learning effect of intercultural communicative competence, a medium effect of intercultural knowledge, and a small effect of intercultural awareness.	Guillén-Nieto & Aleson-Carbonell (2012)
Explored the role of gaming in developing cultural literacy. Gamers learnt the colonial narrative, the power of international monopoly capitalism, imagined western leadership roles, and felt prepared to navigate different geo-cultural spaces.	Pandey et al. (2007)
Explored literacy acquisition concerning video game play culture. Literacy practices can be absorbed through socially mediated ways.	Toscano (2011)
Explored the development of sociocultural literacy. Playing video games caused Japanese language learning, raised Japanese culture awareness, and developed multimodal literacy.	Smith & Deitsch (2007)
Raised knowledge about the Palestine-Israel conflict.	Cuhadar & Kampf (2014)
Enhanced global world processes understanding.	Crogan (2008)

4.1.8. Perceptional outcome

The twenty papers addressing perceptional outcomes used a range of study designs to look at entertainment AAA games (12) and serious games using IVET (6). Eastwick & Gardner (2009) and Martey & Consalvo (2011) examined virtual worlds *There.com* and *Second Life*. Alhabash & Wise (2012) investigated the effects of video games on the changing of explicit and implicit attitudes towards foreign nations using the serious game *Peacemaker*, and Bogost (2011) found that serious game *Darfur Is Dying* could foster empathy. A number of studies addressing

perceptional outcomes involved RCT (5), qualitative (6), quasi-experimental (4), content analysis (4) and correlational (1) study designs. Table 7 summarises the perceptional outcomes.

Table 7 Perceptional outcome

Outcomes	Authors
An increase in racial biases and stereotypical cultural associations.	Behm-Morawitz, Hoffswell, & Chen (2016); Cicchirillo (2015); Yang, Gibson, Lueke, Huesmann, & Bushman (2014); Eastin, Appiah, & Cicchirllo (2009); Borries et al. (2007); Höglund (2008); Gerber & Aboulkacem (2016)
A decrease in implicit racial biases and stereotypical cultural associations.	Banakou, Hanumanthu, & Slater (2016); Behm-Morawitz, Pennell, & Speno (2016); Peck, Seinfeld, Aglioti, & Slater (2013); Bente, Dratsch, Rieger, & Al-Issa (2014); Alhabash & Wise (2012); Vang & Fox (2014)
Real-world racial biases emerge in virtual environments.	Eastwick & Gardner (2009); Gamberini, Chittaro, Spagnolli, & Carlesso (2015); Martey & Consalvo (2011)
Acknowledgement of the presence of stereotypes in video games. Negative stereotypes could influence younger gamers.	DeVane & Squire (2008); Gillentine (2007)
Serious games and stimulators foster empathy for terrible real-world genocide, for refugees, and invite gamers to step into the uncomfortable shoes of the downtrodden.	Bogost (2011); Kors et al. (2016)

4.1.9. Intended or unintended outcomes.

Obviously, outcomes in serious games are usually intended since these games have the clear aim of teaching or testing something. The majority of papers that studied serious video games and serious video games using IVET reported outcomes which were intentionally designed. The papers that studied entertainment AAA games reported outcomes that could be classified as unintended. The capacity of real-time strategy games like *Age of Empires* or *Rise of Nations* to support intercultural literacy learning (Pandey et al., 2007) or the *Grand Theft Auto* series to reinforce stereotypical racial associations (Cicchirillo, 2015) are examples of entertainment games yielding unintended outcomes.

4.2. Discussion of video games' impact and outcome from the intercultural perspective

The potential of video games as a tool for intercultural, diversity and inclusive education seems significant. They play an increasing role in shaping and broadening players' imagination and worldview (Petkov & Rogers, 2011). Many games explicitly or implicitly encourage gamers to absorb their built-in cultural messages (Smith & Deitsch, 2007; Toscano, 2011) and let players soak in cultural content in an engaging way (Mortara et al., 2014). Video games also provide players with a "safe" place where they can acquire culture and play with cultural identities in a virtual environment that realistically imitates real life (Zielke et al., 2009). These realistic in-game environments provide a space where gamers can be open and vulnerable, question their beliefs, and increase their empathy for the culturally different other (Anderton & King, 2016).

The media and cultural scholars seem to have taken notice, as evidenced by the steady number of studies published on the topic during the last two decades. This research shows there is definite interest in using video games as a medium for intercultural and inclusive education. Fifty-eight papers, one thesis and two book chapters were selected to be included in this paper. Chapters from the books by Bogost (2011) and Brown (2008;2014) and Gillentine's thesis (2007) are included in the review as they answer the research question. Bogost (2011) explained how the serious game *Darfur is Dying* can foster empathy for refugees, Brown (2008;2014) justified the opinion that *EverQuest* can teach cooperation between different races and the valuing of diversity, and Gillentine (2007) explored stereotype awareness, stereotype perception, and the impact of AAA sports, racing and shooting video games. The articles selected for this review were analysed in the modified multi-component framework (Connolly et al., 2012), examining game genres according to their purpose, the study methodology used, and the specified outcomes, which provides a framework for understanding the impact and outcomes of the video games from the intercultural, diversity and inclusion perspectives.

The main findings of this research suggest that video games, on the one hand:

- contain racially stereotypical material, with minority characters built around either negative or cultural stereotypes;
- privilege whiteness and Eurocentrism;
- reinforce "*contemporary commodity racism*" (harmful stereotypes); and
- increase racial bias and stereotypical cultural association.

On the other hand, video games:

- support the acquisition of cultural knowledge and the development of intercultural literacy,
- decrease racial bias and stereotypical cultural association;
- help to acquire intercultural literacy, socio-cultural literacy, cultural awareness and self-awareness, and cultural understanding of different geopolitical spaces.

In addition, this research provides evidence that the use of IVET games and simulations in the intercultural area, regarding positive learning outcomes and engagement, leads to:

- increased pro-social behaviour (willingness to help strangers);
- increased and intensified empathy and sensitivity towards people different from oneself;
- treatment of out-group members as if they were in-group.

The findings, therefore, suggest that both entertainment and serious video games provide a wide variety of learning outcomes during gameplay and immersive experience in virtual worlds, confirming that the digital game space "is a site for playful simulation, rehearsal, and experimentation that may transfer to real-life" (Darvasi, 2016). Games also allow players to explore cultural options without reprisal or judgment, and to engage in a multitude of cultural identities and experiences in an active way, resulting in the deconstruction of stereotypes. Moreover, games are capable of affecting players' ethical mindsets and changing their attitudes towards culturally different people (Zagal, 2009; Cuhadar & Kampf, 2014). Our results also confirm that games are tools for persuasion and influence thoughts and actions (Bogost, 2011; Gee, 2003). Furthermore, this study offers a glimpse of the potential of video games to become agents of social and personal transformation (Darvasi, 2016).

4.3. Summary of Chapter Four

In this chapter, the existing evidence concerning the effects and outcomes of video games on intercultural knowledge and skills acquisition is determined. In this systematic literature review, I have included a mix of empirical evidence, case studies, and content analysis research to answer my research questions. Video games can be educational, and they can prove valuable to many players because of the additional perspective and outlook they present. However, even though today's video games cater to aim ever wider player audience, some of them still underrepresent and stereotype minority groups, promote whiteness and Eurocentrism, and foster racism. It is clear, that much work remains to be done in the field of research on the intersections

of video games and intercultural, diversity and inclusive education. Thus, chapters Five and Six will examine intercultural knowledge and skills acquisition using qualitative and quantitative methods.

Part II: Experimental findings

Chapter Five: "Empathy Video Games" as Awareness Raisers, Attitude Changers and Agents of Social Change

Real-world society can be viewed as a large game: there are choices to be made, the outcome is uncertain, and there are competing interests.

Edward Castronova

Modern society is becoming increasingly culturally and ethnically diverse. A major contributor to this trend is migration. Advances in technology and modern transportation are fuelling a global movement of migrants in search of greater freedom, better education for themselves and their children, a higher quality of life, and more economic opportunities. An estimated 258 million people are international migrants, including 65.3 million are forcibly displaced people and 21.3 million refugees seeking asylum outside their countries of origin (UNHCR, 2015). It is approximately 3 per cent of the world's population that produce more than 9 per cent of global GDP (Kobler, Lattes & Hovy, 2017).

Whatever their reasons for leaving their home countries, all migrants have to adapt to and integrate themselves into the mainstream culture of their new countries. Living in a multicultural society is a long educational process fraught with cultural tension. Countries around the world, including many liberal democracies, have expressed concerns about incoming ethnic cultures threatening the welfare state, social and cultural cohesion, the existing political and economic power structure, and employment opportunities. These perceived threats have led to heated political debates and the adoption of immigration reforms aimed at strengthening countries' borders.

Using video games as a supplement to classroom instruction is might be beneficial (Prensky, 2007), but there is still a need for baseline research into how games are actually being used in formal and informal education. The SLR of the recent literature presented in Chapter Four leads to some interesting conclusions. First of all, video game use is a hot topic in training and education. Secondly, intercultural games are in demand, and there is growing interest on the part of trainers and researchers. Thirdly, the potential of serious games for learning and education is beyond doubt (Gee, 2003). While many studies have proved that digital games make

the learning of curriculum content engaging and stimulating, their degree of effectiveness as learning tools and the exact types of learning outcomes that can be achieved through gameplay are still to be demonstrated. The current study aims to meet this need for further research into the particular effects of video game use on end-users.

The following experiments aimed to engage participants in exploring and developing an understanding of and empathy for cultures and people from diverse populations, all with the objective of raising players' awareness of the refugee crisis, increase their knowledge on the subject, and potentially convince them to change their attitudes or views through the experience of being a refugee. Although the research on games and learning has tried several ways of linking gaming to productive skills and literacies, the question remains unanswered "whether video games could create such empathy for the sorts of complex systems relevant to academic and other domains?" (Gee, 2004)

In addition, this study will focus on Gen Zers, young adults from the ages of 16 to 20, which increases its scientific relevance, as digital games are becoming increasingly popular, particularly among teens and young adults (Lenhart et al., 2008). The growing popularity of digital games makes it important to know if and how their power can be used to meet the socially relevant objectives covered by this study, namely, to effect educational, perspective and behavioural change.

This chapter is the result of analysing the effectiveness of video games—especially empathy video games—for tackling difficult social issues such as migratory movements and the refugee crisis.

Transportation theory and integrated threat theory were used to set the following hypothesis:

Hypothesis 1: Someone's knowledge about a complex situation of refugees and migrants will increase after playing an empathy video game.

Hypothesis 2: Much of the threat and resistance felt towards refugees and migrants can be reduced by providing information in an immersive environment. Attitudes of denial towards migrant and refugees will decrease after playing an empathy video game.

Hypothesis 3: Walking in the shoes of the refugee or migrant in a virtual world will increase empathy towards refugees and migrants in real life.

Hypothesis 4: Players who enjoy the game will show greater attitude change.

Hypothesis 5: Players who enjoy the game will show a higher level of willingness to help refugees in real life.

5.1. Study 1

This exploratory study's subjects were first-year students enrolled in the Faculty of Transport and Information Technology at the National Transport University in Ukraine. Students were invited to participate in the study through announcements made during lectures. Potential participants were not given any advance indication of what the study might be intended to measure; they were simply told that the study was about video games and education. Then an email was sent to them explaining the rules and timing of the study and inviting them to complete a pre-test survey accessed through a link to an online form. This first email containing an explanation and a pre-test survey was sent to approximately 200 students. They were offered bonus course credits for volunteering in the study. One hundred thirty-six students accepted to take part in the study. Due to the study's design and timing, forty answers were retained. The final sample size was ninety-seven undergraduate students.

5.1.1. Sample demographics

To analyse the composition of the study group, basic demographic information was collected, namely sex, age, the frequency of video gameplay, and previous experience playing games with a social or political message. Firstly, the mean age of sampled participants was Mage=17.55 (SD=0.91). Secondly, the percentage of male students (73%) surpassed that of female students (27%). Participants were 100% Ukrainians. Lastly, looking at the frequency with which the students sampled played computer games, 23% of them were casual players, 43% gamers, 25% non-gamers, and 9% video game gurus. Eleven per cent of students surveyed stated having previous experience playing games with a social or political message. Four respondents said they had played *Papers, Please* before and were, therefore, asked to choose a different game for the experiment.

5.1.2. Stimuli

The choice of games for this study was based on the author's personal preferences shaped up from the previous experience of delivering intercultural trainings using video games available for the intercultural, human rights, diversity and inclusive education. Other factors considered

were the games' popularity, easy accessibility, online or offline playing availability, the cost involved, and quality. The games were relatively short and did not require players to register before playing. The quality of the games played a crucial role because the poor quality would negatively impact participants' willingness to engage in the study and to play the games in their free time. Previous empirical findings on the effectiveness of the games were also taken into account.

The following games were used in the study. *Papers, Please* is a commercial title designed for entertainment purposes rather than with the intention of developing any particular skills in players. *Against All Odds* and *Survival* are educational games created to reflect the actual problems of today's world, with specified learning goals, outcomes and experiences in mind.

5.1.2.1. Papers, Please

Papers, Please (Picture 1) by Lucas Pope (2013), a puzzle/simulation game described by the developer as “A Dystopian Document Thriller” (Pope, 2013), mirrors a "real world" ongoing contemporary debate concerning immigrant and refugee populations (Morrissette, 2017). Eurogamer portal compared *Papers, Please* to a digital version of the famous Milgram experiment (Whitehead, 2013). *Papers, Please* casts the player in the role of an immigration inspector who has to decide which people queuing in front of the counter must be admitted, turned away, or detained at the border of the fictional former communist state of Arstotzka. Players make decisions by carefully checking documents, asking the non-playable characters questions while complying with the ever-changing rules and regulations imposed by the state. Immigrants appear at the players' desk and hand over their documents, which the player can then pick up and drag across for inspection. A player exercises critical judgement, adapting to change, reflecting on the ethical and social consequences of their in-game actions, not only in terms of the lives of the fictional immigrants and existing citizens of Arstotzka (e.g. terrorist attacks) but also the lives of the player's extended family, who rely on the officer's income for medicine, food and heating. The more arrivals are dealt with correctly, the more money the character earns. Correct assignment earns the player five credits, but if mistakes are made, the player is punished by getting less money, being fired, or being arrested. So, if the player does not process people the way the state says they should, they may not be able to afford medicines for their sick son. The fate of the player's family is on the line and is wholly predicated on the player's ability to perform their job satisfactorily.

Picture 1 Screenshot from the game Papers, Please

Various moral choices are integrated into the game through bribes offered to the playable character by individuals and organisations. The decisions made (e.g. does the inspector allow people without documentation to enter the country, or does he enforce his country's laws?) shape the game's outcome, with such possible endings as the inspector's imprisonment or the downfall of the Arstotzkan regime.

The game does not impose any particular strategy on the player in order to win the game. The player either accepts the rules of the game—working for the totalitarian state—or they can choose to go against this structure and play the game in a moral way, possibly even helping to bring down the government. *Papers, Please* is a game where actions do have consequences, but most of it relies on the player's emotional state and investment. It is the antithesis of the traditional video game hero. Instead, the player is a tiny, dirty cog in a vast totalitarian machine, sitting in a grotty booth, ready to dash the hopes of refugees in exchange for the few credits of pay that will feed their family for the night.

Recently, Morrissette (2017) studied the deep-seated struggle between morality and rationality depicted in *Papers, Please* from the perspective of street-level bureaucracy, Formosa, Ryan, & Staines (2016) concentrated on different aspects of a player's moral engagement in the game, and Lohmeyer (2017) examined the game from the perspective of the political and social ethics of digital humanity.

Picture 2 Screenshot from the video game entry page.

5.1.2.2. Against All Odds

Against All Odds (Picture 2) (UNHCR, 2006) is a web-based role-playing game developed by workers from the United Nations' High Commissioner for Refugees (UNHCR). The objective of the game is to make people more aware of the problems and challenges facing refugees, to change the public's attitude towards refugees by illustrating the complexity and dangers of the refugee experience or, in other words, to have people "taste life as a refugee" (Raessens, 2010, p.94). According to the developers, the game is aimed at teenagers, an age where people begin to develop ideas regarding refugees and similar issues.

Against All Odds covers the whole refugee experience, from the moment people are forced to leave their countries of origin to the start of their new life abroad. Players take on the role of a refugee and play through twelve stages depicting the refugee's persecution and flight from their native country to their eventual integration as an asylum seeker into a foreign country.

At the start of the game, the player chooses a character and their name. The game consists of three modules with four stages each. The twelve stages guide the player from the initial persecution and flight from the refugee's native country to their eventual integration into another country as an asylum seeker. The game's first module takes the player through questioning and persecution and then through the process of fleeing their city and eventually their country. The second module takes the player through the asylum-requesting process, and the third and final module deals with the integration challenges facing the refugee in their new country.

To make it to the end of the game, the player has to take some tough decisions. For instance, at one point there is not enough space in the truck for everybody and the player has to decide whom to leave behind. All of these decisions influence the outcome of the game. They decide whether the player's character gets out of the country or, worse, gets killed, in which case the player has to try again and play the whole stage all over again. The endless short challenges the player faces highlight the complexity and danger of being a refugee.

Besides the information the player gets while playing the game, they can also read the web facts. The game module links to pages with background information about the Geneva Convention and facts on migrants, refugees and asylum from external sources, such as NGOs.

Van 't Riet, Meeuwes, van der Voorden, & Jansz (2018) tested the effects of *Against All Odds* on immersion, identification and willingness to help. In the same vein, Meeuwes (2016) studied the effects of this game on knowledge about refugees, perspective on learning, willingness to help, and feeling of persuasion. Sou (2018) used the game to discuss procedural rhetoric concerning the difficult decisions and dilemmas facing refugees and to analyse the representational practices of serious games that focus on refugees.

5.1.2.3. Survival

Survival (Picture 3) (2017) is a serious game app, available on both Android and iOS, about the human tragedy of migration. It was developed in Algeciras by young Spaniards in collaboration with young migrants and refugees from the Strait of Gibraltar, with the support of the Alliance of Civilizations of the United Nations and the development company Omnium Lab Studios. The participation of people of 11 nationalities has ensured the intercultural axis of the game. The video game gives a first-person account of the odyssey of social inclusion, going through all the stages of migration based on the experiences of thousands of people who embark on a dangerous journey to find a better life to escape from war, hunger and very difficult living conditions.

Picture 3 Screenshot from the video game entry page.

"On the tragic road, migrants find small reasons to fight, hope, overcome, you must take as much as you can from balls of fortune, you will need to survive at the end of the trip," this is how the game starts, with the protagonist in a dark, devastated city. The game protagonist is a white avatar without gender, a symbol of peace and hope. This protagonist has to overcome different levels of difficulty using language and other skills to reach their goal of achieving a better life. Evil characters lurk along the way, like the wolf asking questions. The questions and answers that appear in 'Survival' are inspired by the experiences of young refugees in the Strait of Gibraltar.

In *Survival*, the gamer passes through different worlds corresponding to each stage of the migratory journey. Each of these worlds has different game mechanics:

- a conversation game dealing with a wolf (an allegory of the mafias) who will convince you to pay money to cross the Mediterranean in a boat,
- a skills game to keep the boat afloat on a stormy night on the Mediterranean,
- a runner game to avoid being intercepted on the beach by the black seagulls that symbolise the elements of coastal surveillance,
- a platform game to advance through the countryside to the city while avoiding obstacles,
- a shooter game to beat the final monster, Aisha Kandisha, a figure in Arabian mythology depicted as a woman with the legs of a ram that is used here to symbolise the fears and difficulties of migrants and collision with legislation.

Finally, the player reaches the city where they have to overcome all their fears to achieve social inclusion.

This is the playful part of the game. More serious are the informative texts that accompany each screen and talk about the reality of this tragedy affecting hundreds of thousands of people around the world, with data and figures such as the number of people (thousands) who die every year trying to reach the coasts of Europe.

Survival is a serious game that seeks to educate players about the reality of the thousands of people who are facing the tragedy of migration. By putting players in migrants' shoes, it makes them go through migrants' experiences and fears, changing players' focus, the perspective with which this problem is analysed and viewed in our social context.

5.1.3. Procedure and design

The following instruments were used to collect quantitative data from the students sampled: (a) a pre-test questionnaire and (b) a post-test questionnaire. To avoid any communication barriers, the students surveyed could choose to read and answer the questions in either English or Ukrainian.

5.1.3.1. Pre-test questionnaire

At the beginning of the study, the students were asked to fill in an electronic pre-test questionnaire designed with Microsoft Office 365. The objective at this point was to test students' attitudes towards and knowledge about refugees and migrants. This pre-test questionnaire was based on scales and had two parts. The first one dealt with biographical information, such as gender, nationality, age, and frequency of computer game play by self-determination. The second part was a pre-knowledge and attitude scale. It consisted of fifteen items exploring three variables: (a) awareness of migrant and refugee issues, or knowledge, (b) empathy for refugees and migrants, and (c) attitudes of denial towards refugee and migrants. The three-part attitude scale was partly adapted from Jacobs (2017). The fifteen items included in this three-part attitude scale were developed by the author of this study drawing on the content of the games, and two of them were adopted from Henry & Sears (2002) Students were asked to rate on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) the degree to which they agreed with the statements. Each dimension was then rated by summing up the responses.

5.1.3.2. Post-test questionnaire

Some days after the students had played the game of their choice, picked from the three offered, they were asked to fill in an electronic post-test questionnaire. The post-test questionnaire was divided into three well-defined parts: (a) general feedback, (b) post-knowledge and attitude evaluation and (c) call for action. The general feedback section comprised open-ended questions inquiring about the general experience the participants had had with the games. The 'Enjoyment and Educational Value' scale is a combination of hedonistic and eudemonic outcomes (Ryan & Deci, 2000) and was adopted with some modifications from Jacobs (2017). The second part consisted of a post-knowledge test that included the same items as the pre-knowledge test arranged in a different order. The purpose of using the same test questions was to determine whether playing the game had led the students to acquire new knowledge and changed their attitudes. The last part assessed whether the participants were ready to actively improve their knowledge on the intercultural topics and to take action to help immigrants and refugees. All items used in the study are listed in Table 1.

5.1.3.3. Procedure

The study lasted a week and a half. In the first week of the study, the pre-test questionnaire was administered to the students to determine their type and their prior knowledge of and attitudes towards the topic at hand. Then, during the weekend, the students were asked to play the game of their choice, resulting in $N_{AgaisntAllOdds} = 55$, $N_{Papers,\ Please} = 24$, $N_{Survival} = 19$. The main reasons students reported for choosing one game over another included the game's technical requirements, a captivating name and description, language variety, and having heard about the game before. This last reason was mainly applicable to *Papers, Please*. Thirdly, the students were asked to complete the post-test questionnaire, consisting of a feedback part, a post-knowledge and attitudes studied part, and a willingness to take actions part. The post-test questionnaire was sent to the participants at the beginning of the second week.

5.1.3.4. Measures

For the current study, the three conceptual scales were developed for the pre-test. The 15 items were combined under scales called 'Knowledge', 'Denial', and 'Empathy' in the pre-test. The first part measured the participants' prior knowledge. The second and third parts gauged the positive and negative attitudes of the participants towards refugees and migrants. Two items in the 'Knowledge' and 'Denial' scales were inspired by the Symbolic Racism Scale (Henry & Sears,

2002). The statements were adjusted to this study as they needed to specifically question how much knowledge the participants thought they possessed about the refugee and migrant situation in the world. This resulted in the following items: “Refugees and migrants are responsible for the social tension existing now in the world” and “Over the past few years, refugees and migrants have gotten more economically than they deserve”.

For the post-test, two more scales were added, 'Education and Enjoyment', and 'Willingness to Take Actions'. The first scale gauged the participants' experience with the video game and was based on hedonistic and eudemonic outcomes (Ryan & Deci, 2000) adapted from Jacobs (2017). 'Willingness to Take Actions' was measured using two behavioural-intention indicators. The participants were asked to use a 3-point scale to rate how likely they would be to (a) attend a *Foundations of Intercultural Communication* course to become more skilled in communicating with people from different cultures and (b) help refugees and migrants (any help) as a volunteer if asked to.

The participants’ 'Knowledge and Education' and 'Enjoyment' scales were assessed with six items per scale, 'Empathy' with five items, 'Denial' with four, and 'Willingness to Take Actions' by two. The participants were asked to use a 5-point Likert scale (1=strongly disagree, 5=strongly agree) to rate all statements, except both items from the 'Willingness to Take Actions' scale and “The game made me think about the refugee and migrant situation in the world” from the 'Education and Enjoyment' scale, which were rated with a 3-point Likert scale (1=disagree, 3= agree) (Lehmann & Hulbert, 1972). All the items used in the study are listed in Table 1.

5.1.3.5. Analysis of internal consistency

The data collected by the study were analysed quantitatively. Incomplete responses were removed from the dataset before analyses were performed. The quantitative analyses of the data were performed using SPSS Statistics software.

The resulting tree scales were tested for interreliability using Cronbach’s alpha. The 'Empathy' scale showed good internal consistency (pre-test: $\alpha = .80$, post-test: $\alpha = .80$), the 'Education and Enjoyment' scale showed decent cohesion (post-test: $\alpha = .71$) and so did the 'Willingness to Take Actions' scale (post-test: $\alpha = .77$). The 'Denial' scale was calculated by averaging all four items and showed a borderline acceptable internal consistency (pre-test: $\alpha = .71$, post-test: $\alpha = .63$). However, the 'Knowledge' scale didn’t show the same level of cohesion (pre-test: $\alpha = .55$, post-test: $\alpha = .51$). A closer examination indicated that Cronbach’s alpha would increase significantly if the item “I know the reasons why refugees and immigrants flee

from their countries" was excluded from the calculations. The scale and item were retained in this study to enable exploration of this specific topic. Table 1 shows the means and standard deviations for each item and scale. The relevant scale presents Cronbach's alpha.

5.1.3.6. Data analysis

The data collected from the study were analysed qualitatively. Incomplete responses were removed from the dataset before analyses were performed. The quantitative analyses of the data were performed using the SPSS Statistics 23 software. The first step was to investigate whether the mean scores from two experimental conditions were statistically different from one another, in general, using repeated-measures t-test. Second, the differences in influence between three experimental games were determined by means of univariate analysis of variance (ANOVA). Third, a regression analysis was performed to investigate the potential mediation of 'Enjoyment and Education' on knowledge and attitudes change. Interpretation of the data was according to the guidelines laid out by Cohen (1988). The results obtained were compared and contrasted intra-group and between groups in order to find any significant differences that might confirm whether or not there is a change in knowledge and attitudes as a result of playing one of the games.

5.1.4. Results of Study 1

5.1.4.1. Effects of video game usage on Knowledge, Denial and Empathy attitude change

In order to compare the impact of video games on participants' knowledge, attitude denial and empathy, a paired-samples t-test was conducted. The level of knowledge about refugee and migrant issues before and after playing the game showed that there was no significant difference in the scores in pre-test (M = 3.26, SD = 0.59) and post-test (M = 3.18, SD = 0.56) conditions; t(97) = 1.4, p = 0.164. These results suggest we have to retain the null hypothesis that there are no differences between the conditions.

However, there was a significant difference in the scores for the 'Denial' attitude (M = 2.75, SD = 0.76) and (M = 2.52, SD = 0.61) conditions: t(97) = 3.75, p = 0.000; and for the 'Empathy' attitude (M = 3.98, SD = 0.49) and (M = 4.20, SD = 0.66) conditions: t(97) = -3.56, p = 0.001. Together this suggests that video games affect the attitudes of denial and empathy, which supports our hypothesis.

Table 8 Items list for the measures used in this study

Item	Pretest M (SD)	Posttest M (SD)
Knowledge (α pre: .55 , α post: .51)	**3.3 (1.1)**	**3.2 (1.1)**
Refugees and immigrants are responsible for the social tension that exists now in the world and in the EU	2.1 (0.9)	2.0 (1.0)
I know the reasons why refugees and immigrants flee from their motherlands	4.0 (0.9)	4.3 (0.8)
Refugees/immigrants don't integrate into their new societies, they stay with people similar to them	3.1 (1.0)	2.9 (1.1)
Refugees and migration are a big problem in the world and in the EU now	3.9 (1.0)	4.0 (1.0)
I don't know what to expect from refugee/immigrants	3.4 (1.1)	3.0 (1.1)
My lack of knowledge prevents me from feeling comfortable next to refugees and immigrants	3.0 (1.3)	2.9 (1.2)
Denial (α pre: .71 , α post: .63)	**2.75 (1.1)**	**2.5 (0.8)**
Refugees and immigrants should stay where they were born	2.5 (1.0)	2.3 (0.9)
Refugees and immigrants steal our jobs	3.1 (1.1)	2.9 (1.0)
Politicians care more about refugees than about their own citizens	2.6 (1.0)	2.4 (0.8)
Over the past few years, refugees and migrants have recieved more economically than they deserve	2.8 (1.0)	2.5 (0.8)
Empathy (α pre: .80 , α post: .80)	**4.0 (1.0)**	**4.2 (0.8)**
Refugees and immigrants have the same rights as I do	3.8 (1.4)	4.0 (1.0)
I feel sympathy for refugees and immigrants	3.7 (1.0)	4.2 (0.8)
I would help a refugees and migrants to integrate into society	3.8 (1.1)	4.1 (1.0)
I respect people regardless of where they are from	4.7 (0.6)	4.7 (0.7)
I would live next door to a refugee or migrant family	3.7 (1.0)	3.9 (1.0)
Enjoyment and Education (α post: .71)		**4.0 (0.8)**
I've learnt something new		4.4 (0.9)
I like this way of learning about refugees and immigrant issues		4.6 (0.8)
I like experiencing the life of refugees and migrant		3.9 (1.1)
I like how the topic is presented in the game		4.5 (0.9)
The content of the game has a strong message		4.2 (0.9)
The game made me think about the problems of the refugees in the world and in my country		2.7 (0.8)
Willingness to Take Actions (α post: .77)		**1.9 (1.6)**
I would like to attend a special Foundations of Intercultural Communication course to become more skilled in communicating with people from different cultures		1.9 (1.2)
I would somehow help refugees and migrants as a volunteer		1.9 (1.3)

5.1.4.2. Effects of enjoyment from video gameplay on attitude change and willingness to take actions.

The second hypothesis held that the 'Enjoyment and Education' value of the content would predict greater attitude change. The independent variable used in this analysis was 'Enjoyment and Education'. This variable was measured only once in the post-test, and a linear regression was run to understand the proportion of variance in the 'Knowledge', 'Denial' and 'Empathy' attitude changes that this variable accounts for. To assess linearity, scatterplots were plotted. Visual inspection of these plots indicated a linear relationship between the variables for 'Denial' and 'Empathy' but not for 'Knowledge'. There were homoscedasticity and normality of the residuals for 'Denial' and 'Empathy'. 'Enjoyment and Education' as a sole predictor explains 27.5% of the variance in the difference of 'Empathy' between pre- and post-test with adjusted $R2$ = 27.0%, a medium-size effect according to Cohen (1988), and it also statistically significantly predicted 'Empathy' attitude change, $F(1, 96) = 36.41$, $p < .0005$. 'Enjoyment and Education' as a sole predictor explains 4.2% of the variance in the difference of 'Denial' between pre- and post-test with adjusted $R2$ = 3.2 %, and it statistically predicted 'Denial' attitude change, $F(1, 96) = 4.180$, $p < .044$. There was no linear relationship for the 'Knowledge' scale. In summary, the hypothesis is partially supported. Furthermore, there was no linear relationship between 'Enjoyment and Education' and 'Willingness to Take Actions in Real Life'.

4.2.5.3. Differences between games within a category

To investigate the possible differences between the games, a variance analysis (ANOVA) was conducted. With regards to 'Knowledge', there were no substantial differences between conditions (F = 1.08, p = 0.36). The same situation was found with regards to the attitudes of 'Denial' (F = 1.32, p = 0.26) and 'Empathy' (F = 0.75, p = 0.56). However, 'Denial' decreased from pre- to post-test for the group that played *Against All Odds*, and the 'Empathy' attitude increased from pre- to post-test for the groups that played *Against All Odds* and *Papers, Please*. The second ANOVA revealed a substantial effect on 'Education and Enjoyment' (F = 4.98, p = 0.008), with a greater level of 'Education and Enjoyment' for the group that played *Against All Odds* as compared with *Survival* and especially *Papers, Please*. No differences between conditions were found for 'Willingness to Take Actions' (F = 1.17, p = 0.31).

5.1.5. Discussion of results of Study 1

The study leads to the conclusion that there was no evidence to confirm hypothesis 1. Hypothesis 1 was based on research by Neys & Jansz (2010) and Ruggiero (2015), who found that after playing offered video games, the participants' knowledge about the issues had changed notably. Playing an empathy video game did not increase participants' knowledge about the complex social issue presented in the game. Thus, hypothesis 1 is rejected in this study.

Hypothesis 2 and 3 were inspired by Ruggiero (2015) and Alhabash & Wise (2012), who reported a significant change in participants' attitudes in their experiments. This study reports a very small size effect on the attitude of 'Denial' towards migrants and refugees and a medium-scale size effect on 'Empathy' after playing an empathy video game. As a result, hypothesis 2 and 3 are accepted.

Hypothesis 4 was based on the research by Jacobs (2017) that found broad support for the hypothesis that participants who enjoy a game will show greater attitude change. This hypothesis is supported by this study, as well.

Hypothesis 5 was based on the promising results of Peng et al. (2010) who reported that video game playing resulted in a willingness to help people in humanitarian-disaster zones (e.g. by donating money, discussing the refugee situation with friends or family, etc.). The 'Willingness to Take Actions' scale differs from the one used by Peng et al. (2010), but the idea is still quite similar. 'Willingness to Take Actions' was assessed as the outcome, and 'Knowledge', 'Denial', 'Empathy', and 'Enjoyment and Education' as potential mediators. Study 1 revealed that the choice of video game did not affect participants' willingness to take action, so hypothesis 5 is rejected.

To sum up, when games were measured individually, the results did not show any significant differences in attitude change. One possible explanation could be the small sample size of each group. However, when attitude change is measured for all groups taken together, changes emerge for 'Denial' (a decrease) and 'Empathy' (an increase). Furthermore, 'Enjoyment and Education' had an effect on attitude change for 'Denial' and 'Empathy', but not for 'Knowledge'. Interestingly, no evidence was found, suggesting that empathy video games stimulate a willingness to take actions in real life.

5.2. Study 2

5.2.1. Sample demographics

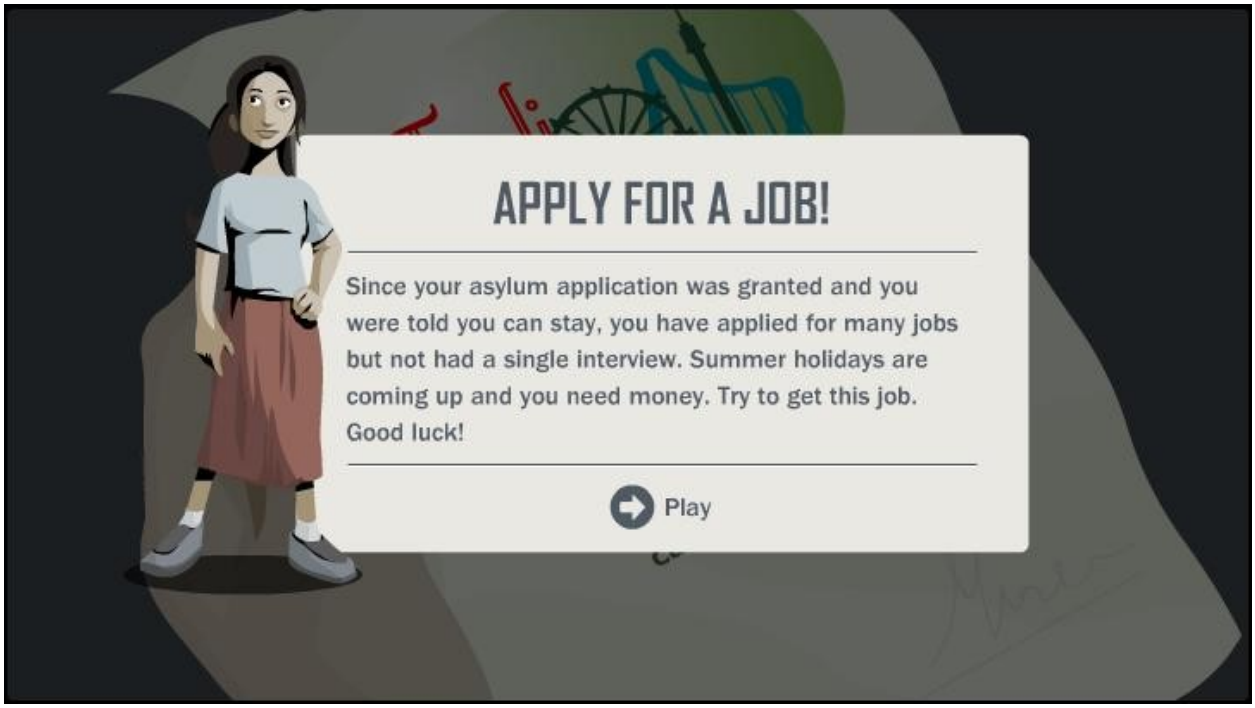
This exploratory study was made up of students enrolled in the first year at the Faculty of Transport and Information Technology at National Transport University in Ukraine. Students were invited to participate in the same manner as in Study 1. Students volunteered to participate in the study in exchange for additional course credits. One hundred seven students took part in the study. Due to the study design, thirty respondents were eliminated as they did not add any value to the study (e.g. incomplete answers, short yes/no answers, etc.). The final sample size was seventy-six undergraduate students.

To analyse the composition of the study group, basic demographic information was collected, namely sex, age, and previous experience of playing games with a social or political message. Firstly, the mean age of sampled participants is 17.05 years (SD = 0.88). Secondly, the majority were male students (73%), with the rest (27%) being female students. The participants were 100% Ukrainian. Lastly, the vast majority of the students surveyed had never played educational or empathy video games before.

5.2.2. Stimuli

The results of Study 1 showed better results for attitude change for the game *Against All Odds* (UNHCR, 2006), which was consequently selected for Study 2. The game is an approximately 45-minute-long simulation game that has been translated into eleven different languages, including Russian. Moreover, the game was awarded the Austrian State Prize for Multimedia and e-Business and was praised for "building understanding, empathy, and concern for the plight of refugees in the player".

Picture 4 Screenshot from the video game, "A New Life: Loss and Challenge" level.



Of particular research interest was the last stage of module 2, "Border Country", and module 3, "A New Life: Loss and Challenge", where the character is trying to adjust to life in a new home. The character needs to do several things: find an interpreter who will help them with language difficulties; take language classes to overcome the communication barrier, (an extreme challenge); look for work opportunities; and build a relationship with neighbours in their new apartment. During this phase, the character experiences a great deal of prejudice, xenophobic comments and hostility from locals who are against his staying in their country, who are unwilling and/or afraid to help the refugee, and who attempt to pressure them into returning to where they came from. The game highlights cultural differences, the confusion, the frustration, the barriers that have to be overcome, and the need to learn to be cautious in new situations. In doing so, the game creates procedural rhetoric about the stigmatisation and marginalisation that migrants and refugees encounter after arriving in foreign countries. At the end of the game, the player is presented with a screen full of additional information and ways to take action by either donating or spreading the word.

From a "gamer's perspective", most of the "action" takes place in the third act. Other steps are based on multiple-choice responses or on-screen clicking to read what happens or what characters are thinking.

5.2.3. Procedure and design

This case-based study employed a narrative research methodology (Chase, 2011; Riessman, 2008; B. Taylor & Francis, 2013) to collect the experiences of the participants engaged in gameplay. The participants were offered to keep a reflective learning journal with prompts to assist them during or after gameplay in their reflections about their engagement, enjoyment, difficulties, reflections on their personal reactions, on the events, learning outcomes and links to the real world.

5.2.3.1. Data analysis

During the qualitative analysis process, researchers are recommended to engage in a verification process to ensure that the themes found are accurate representations of participants' stories (Fassinger, 2005). For this reason, I consulted a colleague, Dr Iryna Sykorska, who has ample experience with qualitative research and is an expert on intercultural communication and transformative educational approaches to teaching and education. During the data analysis stage, the researcher and Dr Sykorska conducted analyses on their own and then discussed overlapping themes that appeared on both researchers' lists. Coding of the themes was done manually on hard-copy prints out following a streamlined codes-to-theory model for qualitative inquiry (Saldaña, 2015). In general, both me and Dr Sykorska reached similar descriptions of participants' experiences with video games. When some minor differences in interpretation arose, the researchers double-checked the written data to confirm the absence or presence of a theme resulted in doubts.

5.2.4. Results of Study 2

Writing prompts with general instructions directing students to write down notable in-game experiences were given. After the participants initiate gameplay, they noted subjective judgments represented by self-reports regarding feelings of interest, fun, engagement, and enjoyment, and immersion. As previously stated, Study 2 intended to make players reflect upon their acquisition of new knowledge, changes in attitude brought on by gameplay, the experience of an event in the game and linking this gaming experience to their real-life personal reactions combined with emotions and thoughts. Their self-reflections on those reactions cumulatively contributed to seven themes that were identified from the data, namely:

Increased understanding of the scale of the refugee crisis in the modern world

Increased understanding of the difference between refugee and migrant

Increased cognitive empathy for refugees

Increased level of self-awareness

Demonstration of willingness to take actions in real life

Easiness of connecting the video game with the real world

Strong general impression from the game.

5.2.4.1. Increased understanding of the scale of the refugee crisis in the modern world

A significant proportion of migrants are refugees who seek protection abroad because of insecurity and fear of persecution in their home country. There are currently around forty active conflicts in the world, with varying degrees of severity. In addition to causing humanitarian emergencies and widespread destruction, these conflicts resulted in 65.3 million internally displaced people (IDPs) and 24.5 million refugees in 2015 (Hakimi, 2018). Many participants didn´t really realise the scale of the problem before they played the game,

"Some moments of the game seemed very informative to me, and I could immerse myself in the lives of real refugees",

"The problem the game highlights, and even the fact of its coverage, is impressive because many of us do not thoroughly imagine the tragedy that is going on in the world",

"This game showed me the problem of refugees. I cannot say that I understand them, but I began to understand the difficulties that they face."

Some participants thought they were more knowledgeable about the topic, but in reality, they understood that their knowledge of the issue was minimal,

"I learned more about refugees, and now I realise that I do not know anything about them and their lives",

"I became more serious about the problem of immigrants in my country",

"I had not thought that immigrants have such serious problems; now I am convinced that they do have them",

"To this day, I did not imagine how big this problem is."

5.2.4.2. Increased understanding of the difference between refugee and migrant

While the distinction between refugee and migrant might seem obvious, many participants confessed that they failed to recognise the difference, and one of the main takeaways from the game experience was learning to distinguish these two,

"Previously, I interpreted the meaning of "refugee" and "migrant" differently. However, having played this game, I began to see the difference in these meanings in a new way",

"In my opinion, the biggest thing I learned in this game was seeing the difference between a migrant and a refugee, putting myself in their place, understanding them, supporting and sympathising".

5.2.4.3. Increased cognitive empathy for refugees

Some participants stated that they understood the real manifestation of stereotypes and prejudice,

"While playing the game, I was surprised by the attitude of people towards refugees and the stereotypes that these people believe in for some reason".

Some participants were surprised by the intolerance and ignorance of the local population,

"There were moments it was not comfortable to be at the refugee's place, but I understood that to fight against the new environment would be a mistake (the situation with security in the shopping mall), even though discrimination is clearly expressed and very offensive",

"I was shocked by the number of people who were aggressively opposed to refugees … Almost no one believes me! Such a life is terrible!".

5.2.4.4. Increased level of self-awareness

The transgressive nature of the game world and the actions the character has to take for survival appeared to facilitate self-learning and self-disclose. Some participants discovered features in themselves they didn't realise they had,

"Since I did not have the right to make mistakes, I had to think one step ahead. After all, the decisions I took in the present played a role in the future. I happen to be a strategic thinker",

"I faced the fact that I am very indecisive",

"I felt uncomfortable being under pressure all the time. I don't accept pressure even from those closest to me. But in the game, every decision was made under pressure. I do not find this pleasant",

"I realise that I am very trustful. I like trusting people. But in the game, I found myself in trouble when I believed strangers. I shouldn't have!"

Some participants realised that they don't want to be involved in this type of issue,

"This game was ruthless for me. I understand that the game is based on real-life cases, cases very similar to the situation that people from the east of Ukraine are in now. But I hope that I will never find myself in such a situation … Also, I was very frightened by the scene where the police beat the main character because of his beliefs; it was terrible for me."

Some participants faced difficult moral dilemmas that made them wonder if they would behave in the same manner in real life,

"In the game, I was forced to make a choice that did not match my mindset. I felt depressed",

"During the interrogation in prison, it was necessary to fill out a questionnaire the way the government wanted. I couldn't pass the level because I told the truth. And then I realised that I had to lie to escape. I hate lying!",

"During the third stage, when it was necessary to choose a new way of life, there was no way that I would want to choose, so I had to make a decision that didn't coincide with who I am",

"In the game, the most difficult decisions were influenced by the gaming environment (e.g. to expel friends and neighbours from the car to escape). It affected the flow of the game positively, but it made me feel very bad because I imagined having to do this in real life, and I would not have behaved so",

"It was hard to choose between my interest and the interests of the whole group. I had to negotiate with myself."

5.2.4.5. Demonstration of willingness to take actions in real life

Stimulating a willingness to take actions, to somehow contribute or even to simply spread the word is an essential trait of videos for educational purposes. *Against All Odds* is not an exception. It is full of links to NGO with useful information and ideas on how to contribute. Many participants revealed that they would somehow participate more with the issues,

"I began to think about the issue very much. Now I will learn more about this. Immediately after the game, I read a lot of information about it. I want to know how to help these people",

"A profound interest in this issue has appeared after playing the game. My attitude towards refugees has changed; I will encourage people to appreciate other people as individuals, regardless of their origin, age, race, and nationality",

"Now that I have been in the role of an asylum seeker in a foreign country, even if only virtually, I have become more sympathetic to the fate of forced refugees. I will develop a stronger interest in refugee issues, and if needed, I will find ways to help them."

5.2.4.6. Easiness of connecting the video game with the real world

Participants were encouraged to think about the links between the game and their lives and their country, and to look for "solutions" to the refugee crisis. Many concluded there are no quick and easy solutions, for as long as there are wars and life-threating situations, people will continue to flee from danger.

Some participants connected the game with the global refugee crisis, but the majority linked it to the current situation in Ukraine, where the military conflict with Russia and the annexation of Crimea have caused internal migration processes,

"Many immigrants left our country because the standard of living and wages are much lower than in other European countries, so this question is very relevant to the current situation in Ukraine",

"In our country, there are a lot of refugees from the Donbass who, like in the game, had to overcome difficulties to safely cross the border of the DNR (the self-proclaimed Donetsk National Republic) and enter the peaceful territory controlled by Ukraine",

"Due to the annexation of Crimea and the tragic situation in the Donbas, our country is forced to help the affected people. Our government has made great efforts to arrange their lives in the central and western parts of Ukraine",

"There are a lot of interregional refugees in my country due to military actions in the eastern part. People, and sometimes myself, are very judgemental about them. But unfortunately, in fact, half of the refugees treat their new environment disrespectfully, thus creating the ground to to be treated judgementally."

5.2.4.7. Strong general impression from the game

The majority of the participants were gamers or casual gamers who said they were familiar with virtual gaming environments and their effects. Of course, for students used to modern "bells and whistles" games. a game like *Against All Odds* may seem tedious. Many confessed they had never played games of this type and were surprised by their existence and realism,

"First of all, it became clear that the world is not perfect and most problems do not lie on the surface. Creating such games is a way of informing society and encouraging compassion for and understanding of displaced people",

"Initially, the game did not impress me. But the more I played, the more I was surprised with the essence of the problem it emphasises",

"While playing Against All Odds, it seemed to me that I was really in danger and that I needed to flee. There was discrimination on the part of the students, at the scene at school where I was a newcomer. I realised how difficult it is to understand something without knowing the language."

The participants shared the strong emotions that the game evoked,

"I was tense during the game because of the prevailing atmosphere. It was exciting to go through the whole story, though",

"I felt fear, horror, terrified. This game really worried me. I felt like a refugee, and it felt very creepy",

"What are emotions? Well, tension, concentration, joy at the right actions, disgust at the negative statements of people unfamiliar with me who, on the other hand, do not know me ...",

"I liked the fact that I was able to put myself in the shoes of people of a different social status or profession. Also, the game Against All Odds gives a lot of additional information."

The game evoked philosophical reflections in some players about the situations pictured in the game:

"Sometimes I did something wrong, and I would lose. I played again and again. I felt upset because I realised that in real life I would have died immediately",

"During the stage of the first flight from the city, I was discovered by police officers. I felt frustrated and lost because here it was just a game, and I could try again, but in real life, I would not have been alive anymore."

5.2.5. Discussion of results of Study 2

A core objective of qualitative Study 2 was to challenge the worldview of its participants. The virtual world of *Against All Odds* is constructed around particular viewpoints, expressing particular ideas and offering particular experiences surrounding migration. It has significant potential for introducing participants to a whole new experience they usually would have limited or no opportunity to go through in real life. Moreover, the cost of failure in the game is low (e.g. restarting a game, passing a level again, trying a new strategy), meaning that players risk nothing by trying out competing ideologies, new identities, or different winning or losing strategies.

Study 2 attempted to ascertain if the immersive, all-embracing and interactive learning environment provided by *Against All Odds* helps develop and enhance users' awareness of refugee and migrant issues, change their perspective, and motivate them to take some form of positive action in real life.

The results of Study 2 demonstrated that the game does show extraordinary promise to challenge students' attitudes, show them other realities, help them look beyond entrenched perspectives and motivate them to be change leaders. Seven promising themes were identified from the data that confirm Gee's (2003) argument about the importance of figured words in challenging players' default perspectives on the world. Moreover, research findings support the idea that worldviews are often taken for granted and left unquestioned until they are juxtaposed with other frames of interpretation (Hayes, 2007).

However, it should be acknowledged that these positive findings might be related to the novelty of using this technology to tackle such serious issues (the majority of participants had never played empathy educational games before). More research is needed, therefore, to check the validity of these findings.

5.3. Discussion of results of Study 1 and Study 2

Video games have become so popular among all age groups and especially among digital natives that there is no doubt that research on their effects on players must continue. The current study follows this trend, and the results presented in this chapter add to the growing evidence on the effectiveness of video games in tackling social issues. Migrant movements and refugee crises are sensitive issues. The experiments invited participants to explore what it feels like to be a migrant or refugee. The aim was to raise players' awareness, increase their knowledge on this issue and potentially to convince them to change their attitudes and motivate them to take actions in real life. In order to investigate the effects of video games, several hypotheses were quantitatively tested in Study 1, and qualitative research was conducted in Study 2, the results of which were discussed in detail in subsections 5.1.5. and 5.2.5. It is worth noting that the fact that some students played two of the games, *Survival* and *Papers, Please*, in a foreign language may have had an impact on their perspectives and experience.

Related to this research, empathy video games served as dynamic and interactive learning tools for giving simulated first-hand exposure to global social issues. Transportation theory proved interesting for this study because it involves telling a powerful story that transports the audience into the story and has the power to change how they see the world, irrespective of the truthfulness of that story. Attitudes are influenced by a variety of factors, such as personal trials and tribulations, or incidents that reflect negatively on the person or group that is the subject of the attitude (Batson, 1991). Consequently, bringing about attitudinal change is difficult (O'keefe, 2002). However, both studies reported that participants found the game experience entertaining, with many of them ending up feeling more empathy for migrants and refugees, and less denial. The 'Denial' attitude decreased and 'Empathy' increased, confirming the recent results obtained by Ruggiero (2015) and Jacobs (2017), demonstrating that this effect may be measurable. A positive empathic attitude change was consistent and the strongest outcome in both studies.

Contradictory results were reported concerning willingness to help, which supports other recent contradictory findings (Peng et al., 2010; van 't Riet et al., 2018). Kelman (2006) informs that willingness to help depends on the interest in learning. If the audience enjoys the game experience and gameplay, this leads to increased interest in learning more about the game's issues and, consequently, to actions in real life. No evidence was found to support this statement in quantitative Study 1, but qualitative Study 2 did reveal that participants reported finding the games' features captivating later said they were willing to take actions in real life.

Other contradictory results are related with an upsurge in the knowledge of the issues tackled in the games. The results of Study 1 did not meet expectations. Procedural rhetoric

(Bogost, 2008) about migrants and refugees and challenges that they face were built into the design of the game and conveyed through gameplay. However, playing a game did not increase knowledge in players. This may be explained by the fact that the participants in the study already self-reported a moderate level of knowledge about the issue in the pre-test. In contrast, Study 2 showed a self-reported increase in knowledge about the scale of the problem in the world.

Some limitations of Study 1 and Study 2 are also worth mentioning. Firstly, the willingness to take actions in real life found in the second study lies in the hypothetical field. In Study 2, the participants proclaimed a willingness to take actions in real life and to help migrants and refugees or to somehow change the situation, but this was hypothetical. Their actual behaviour may differ. Still, the empirical study by Liu & Aaker (2008) showed that people who stated their intention of taking action in real life were indeed more likely to actually do it compared with those who indicated no such intention. Secondly, both studies were stand-alone training tools for self-directed and self-motivated learners. Video games may be totally or partially ineffective tools for understanding complex issues like migration and for perspective and attitude change. With instructor support for knowledge construction (cues, tips, different activities, etc.), more learning and attitude change might have taken place. The role of the instructor in debriefing learners should not be overlooked (Garris et al., 2002).

In general, the results mentioned above are heartening for producers of empathy video games. *Survival*, *Papers, Please* and *Against All Odds* are immersive environments that can be additional media for promoting serious social issues and educating people about them without trivialising the problems.

To sum up, this mixed research approach resulted in some exciting but contradictory findings that evoke questions, which in turn calls for more research. The strengths and weaknesses of this study may explain some of the interesting results. These, along with ideas for future research, are discussed in the following subsections.

5.4. Summary of Chapter Five

Profound changes in the global political and economic order generate great displacements of people in almost every region of the world. People are connected to global culture and global networks of communication and will continue to migrate to improve their quality of life. These movements cannot be controlled at the source; what matters is how host countries and their citizens respond.

The games used in this study were designed to increase ethical awareness of the issues involved, arouse emotions, make people see things from the point of view of migrants, change people's perceptions and encourage them to take action in real life. The results of the present study prove that empathy video games can be used to address serious social issues by creating a simplified but still dynamic scale model of reality. They are an effective way of making people live and feel remote situations and negotiate cultural and political spaces as actively engaged citizens. This study, therefore, expands on previous studies by contributing to a better understanding of the possibilities of video games for intercultural, diversity, citizenship, human rights and inclusive education. Furthermore, these two studies add the arguments to the confirmation of the main hypothesis of this thesis and vividly demonstrate that empathy video games help to build cultural literacy in its players by raising players' awareness about culturally other and his or her circumstances, by increasing their knowledge on the challenges of people from different cultures face, by changing their cultural perspective and attitudes, by raising their intercultural sensitivity (increasing empathy and decreasing denial levels) and by motivating them to take actions in real life (to be agents of change).

Chapter Six: Gen Z' video game preferences and learning outcomes. Towards designing better games

"We're witnessing what amounts to no less than a mass exodus to virtual worlds and online game environments."

Edward Castranova

Understanding who gamers are, is not only important from a business perspective but also from a design perspective. According to Bateman & Boon (2006), the game design should reflect the desires of the audience. Game designers and developers need to know the intended audience and understand their needs in order to influence them. Thus, studies on the public's gaming preferences and tastes are gaining attention from designers of commercial, educational, and serious games, as well as from the academic world.

To illustrate the level of interest in the area, lately the general gaming preferences of adults aged 14 and older were studied by Klevjer (2017), Scharkow, Festl, Vogelgesang, & Quandt (2015), Baek (2005), Loffredo & Tavakkoli (2016), Bilgihan, Cobanoglu, Nusair, Okumus, & Bujisic (2013), Bouciguez, Santos, & Abásolo (2014). More specific research is being conducted as well. Blocker, Wright, & Boot (2014) studied the preferences of the ageing generation; Salmon et al. (2017) concentrated on the tastes of older adults; Vahlo, Kaakinen, Holm, & Koponen (2017) investigated the types of game dynamics players prefer Zammitto (2010) explored the correlation between certain personality traits and video game genre preference; Giammarco, Schneider, Carswell, & Knipe (2015) focused on video game preferences and their relation to career interests; Hartmann & Klimmt (2006) investigated the dislikes of German females with regard to video games; Borders (2012) examined the relationship between personality and preferences for different types of video games; Kung-Chien (2012) studied reward preferences in video games; and Billieux et al. (2013) explored self-reported motivations to play MMORPG World of Warcraft (WoW) in gamers ranging from 18 to 66 years.

The purpose of the current chapter is to characterise the features Gen Zers find attractive in AAA entertainment titles, to examine the sex-related differences in gaming patterns, to

identify their expectations of the video games they would be willing to play for hours in the near future and to systematise what they learn while playing.

The approach adopted in our study is complex: I investigated motivations for playing, playing behaviour and a broad selection of player–game interaction preferences ranging from favourite genre to elements that Generation Z anticipates in future games. Additional focus was on possible learning outcomes.

Thus, the present chapter aims to answer the following research questions (RQ):

- What attracts Gen Z gamers to AAA entertainment games and what features and elements do GenZers find the most appealing and would they like to see more in future games?
- What do Gen Zers learn while playing?

6.1. Design and procedure

6.1.1. Participants

To obtain representative samples, participants were recruited online by sending out invitations via social media (Twitter of Valencia Interactive (Local Game Industry community and the official Valencia Unity User Group (VUUG)) and through the mailing lists of organisations at the UPV (Spain) and NTU (Ukraine)[13]. A total of 429 respondents participated in the survey from May 2017 to November 2018. The final sample included data for participants ranging from 16 to 34 years old (the ones who could be called digital natives), resulting in N=427. The mean age of the participants is 23,4 (SD=1.7), with 78% of respondents falling into the Generation Z category and 24% (N=104) being women.

6.1.2. Materials and Procedure

Although our study explored many facets of game preferences, its main objective was to address two broad themes: (1) genres, characters, in-game features and elements participants enjoy and look for in a video game (now and in the future), (2) knowledge acquired while playing.

The game preference questionnaire consisted of 23 items (developed by the authors), 15 of which were open-ended questions where participants were asked to reflect on their

13 Universitat Politècnica de València (UPV); National Transport University (NTU).

experiences (in the broad sense of the word) with video games. The survey included questions regarding the participant's age, sex, gamer self-denomination, favourite game titles; self-reflection on some gaming habits and preferences; and an assessment of the perceived importance of various video game features. The survey was originally written in English and then translated into Spanish and Ukrainian. The data were collected using a web-based survey tool that was accessible through both mobile devices and computers. The survey took about 30 minutes and was designed to be completed in a single session. The data were collected from May 2017 to November 2018. Respondents were assured that all the data would be kept anonymous and confidential.

6.1.3. Analytic procedure

Some questions included in the initial survey did not relate to the current study and will be presented elsewhere. Responses were checked to prevent multiple and inappropriate replies.

6.2. Results

6.2.1. General results

First, a note on the demographic data. Seventy-six per cent of respondents were male, and 24% female. Seventy-three per cent were Spanish and 27 % Ukrainian. Figure 7 and Figure 8 present breakdowns by sex and nationality.

Figure 7 Respondents, by sex

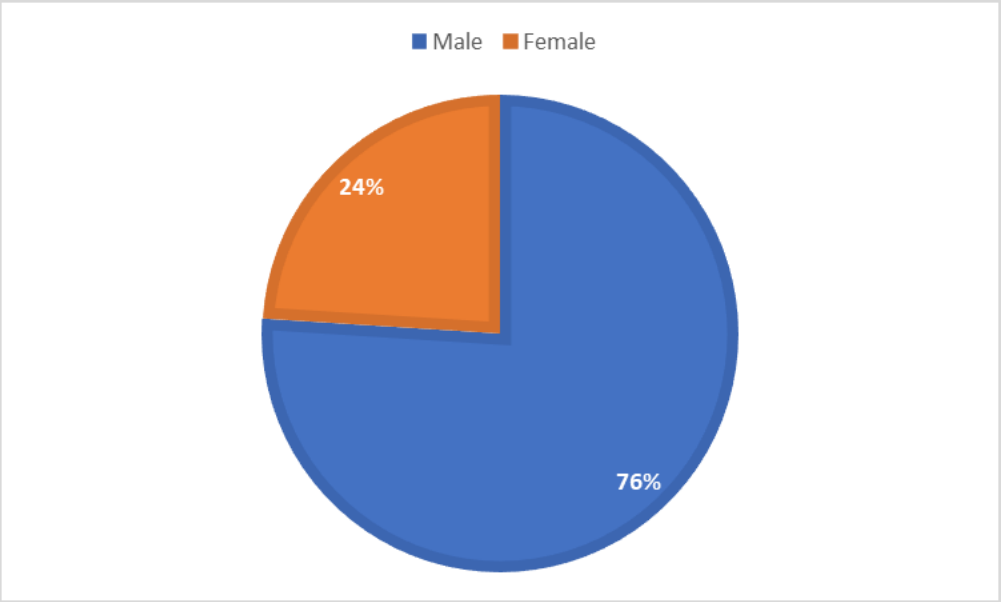
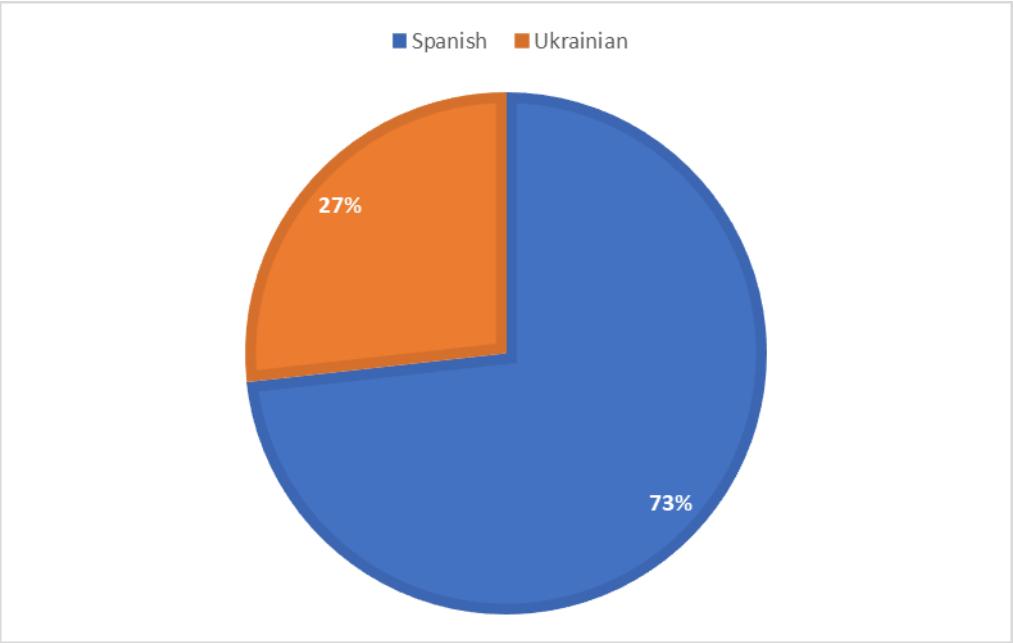


Figure 8 Respondents, by nationality



6.2.2. Self-perception of gamers

To discover respondents' gamer profiles, we let them choose between three options: gamer, non-gamer, game guru. We provided no strict definition of what exactly a gamer or game guru is, letting them choose the option they themselves thought best describes them. The description provided was, *"A gamer is a person who owns at least one game console or gaming device and spends 5+ hours a week gaming"*. Sixty-nine per cent of male respondents consider themselves gamers, 20% non-gamers, and 11% game gurus, while 52% of female respondents place themselves into the gamer category, 40% into the non-gamer category, and 8% into the video game guru category. Figure 9 and Figure 10 show respondents' self-perception in general and broken down by sex, respectively

Figure 9 Respondents' self-perception

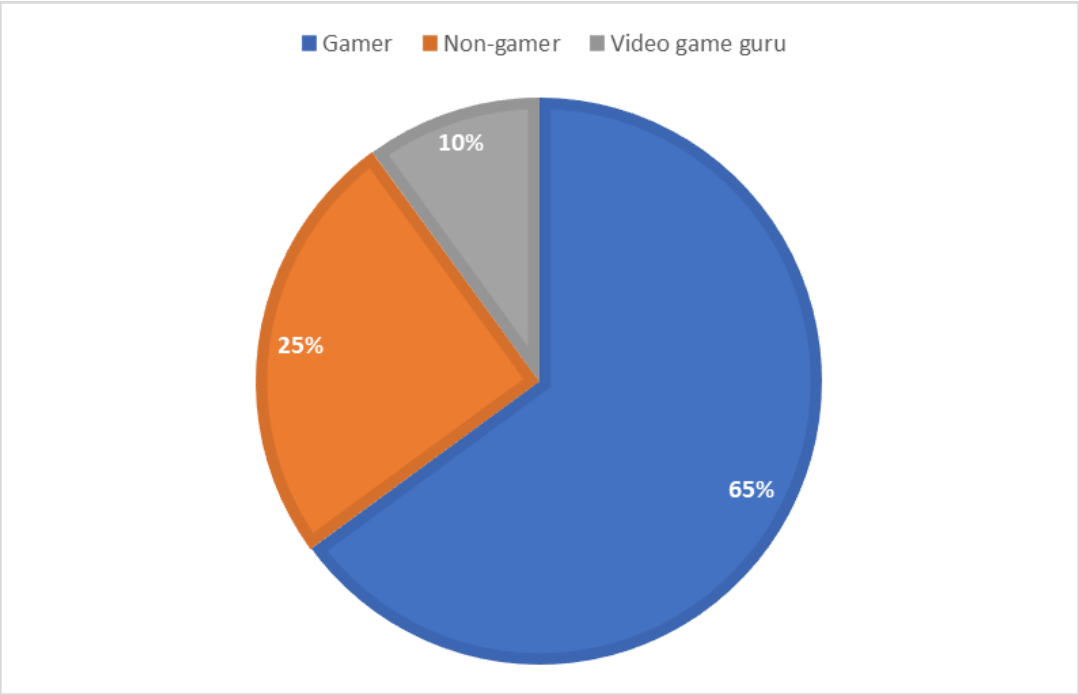
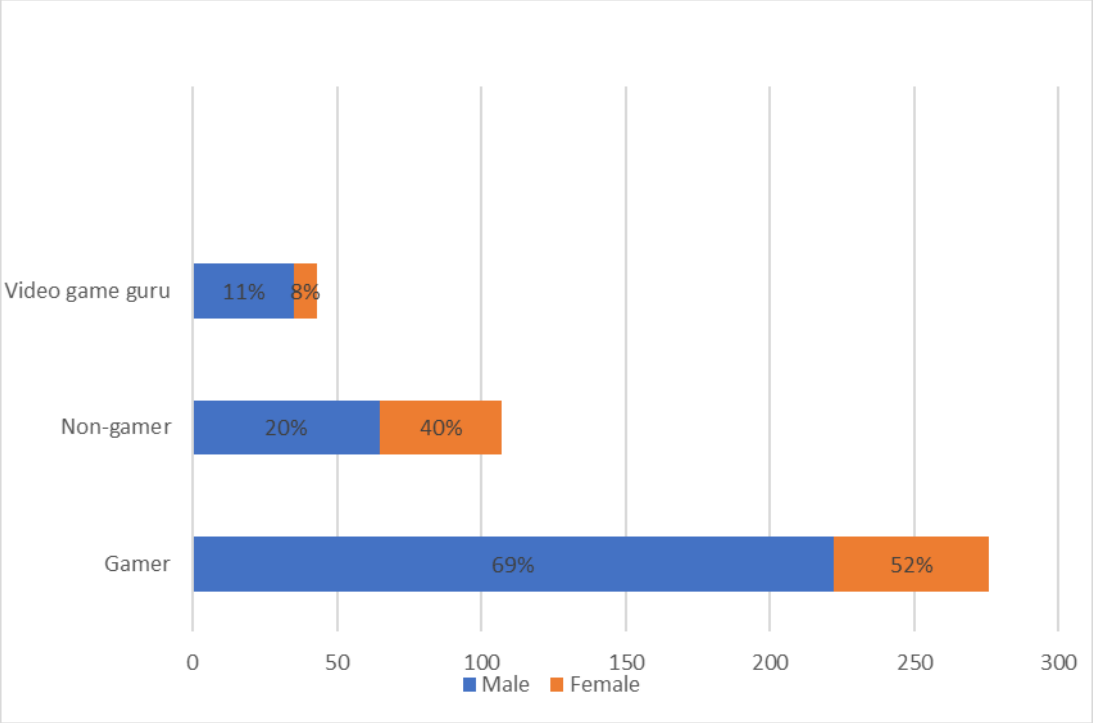


Figure 10 Respondents' self-perception, by sex



6.2.3. What video games mean for Gen Z players

When we asked study participants to describe video games in a few words, 32% stated that for them video games were another form of entertainment (interactive entertainment), a way to spend leisure time, *"a fun way to enjoy yourself when you're bored"*. Nineteen per cent stated

that video games were interactive art, *"video games are pure art if they are well done", "video games are the last of the arts created by humans".* Twelve per cent described them as a way to escape from reality and relax, *"a way to get out of real-life", "awesome. just awesome. funnier than real life*". Eight per cent stated that the games were amazing and fantastic. Eight per cent said they were a way to see a new world, "*video games are a gateway to another universe full of new experiences".* Five per cent of respondents believed video games to be their lifestyle, "*my hobby and my work*", while 7% were sure that video games are a way of learning something new, "*video games are a new form of cultural expression through which we experiment, learn and socialise".* Lastly, 5% described video games as a way to send a cultural message, "*video games are a window to cultures such as cinema or other fields"*, and 4% said video games make them feel like they are the protagonist in a movie, "*like a movie in which you are the protagonist".*

6.2.4. Preferred ways of playing video games

The results showed that the majority of respondents preferred to play with PC/Mac stations. Mobile phones and tablets were the second most popular category of device, with different types of consoles occupying third and fourth places, and arcades bringing up the rear. Twenty-seven per cent of respondents plays video games using one device, 35% use two devices, 24% three devices, 11% four devices, and 3% of respondents use up to 5 devices. Figure 11 and Figure 12 present players' preferred ways of playing video games and the number of devices they use.

Figure 11 Respondents' preferred devices

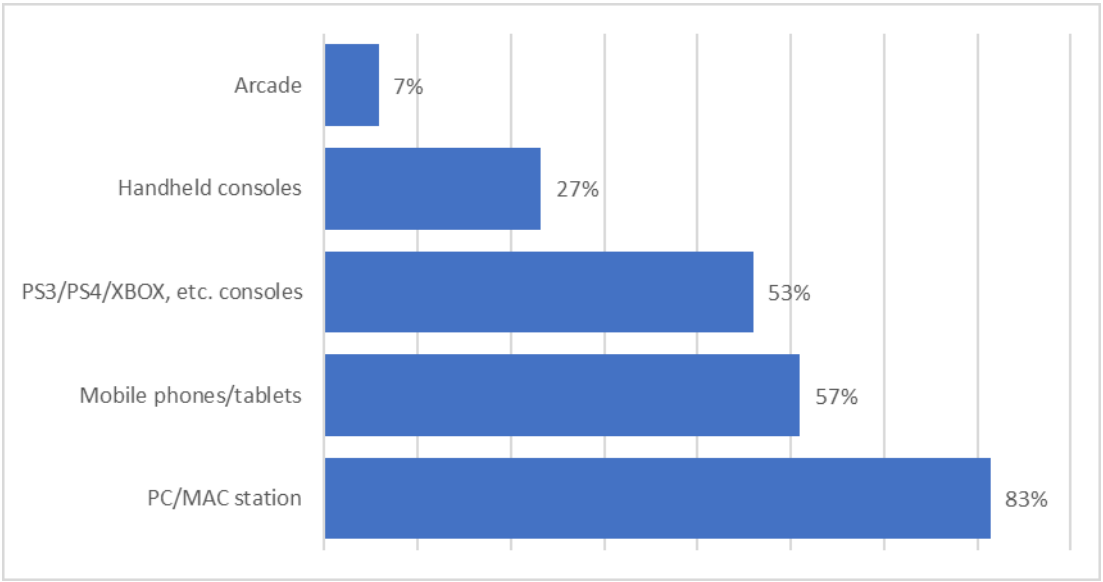
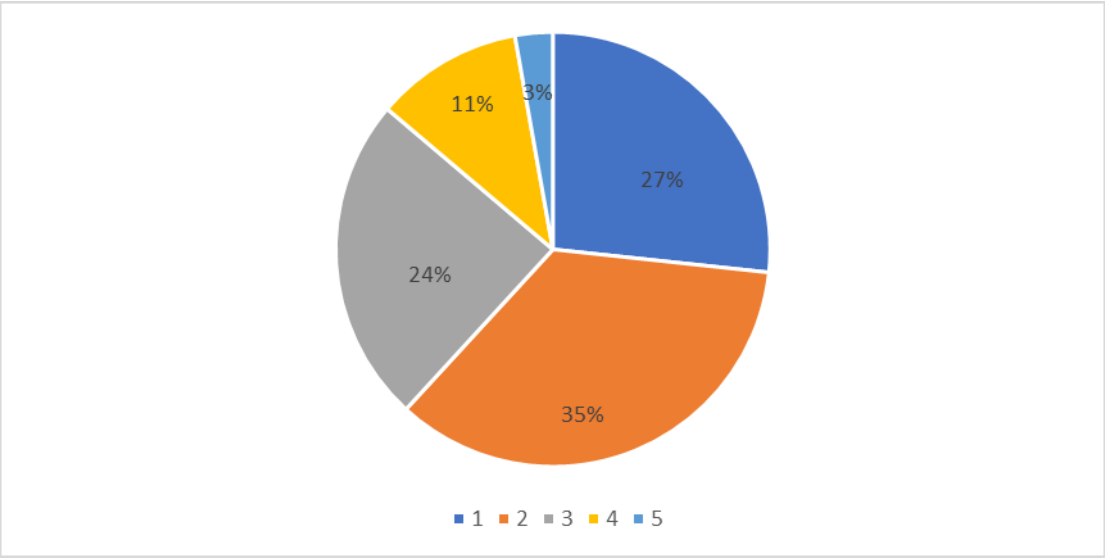


Figure 12 The number of devices respondents used to play video games



6.2.5. Gamers' social playing preferences

Our data showed that female gamers tend to play more with family and friends, with 43% of female respondents marking this option as the most common, whereas 42% of male respondents play alone as well as with family and friends (Figure 13 and Figure 14).

Figure 13 Social playing preferences

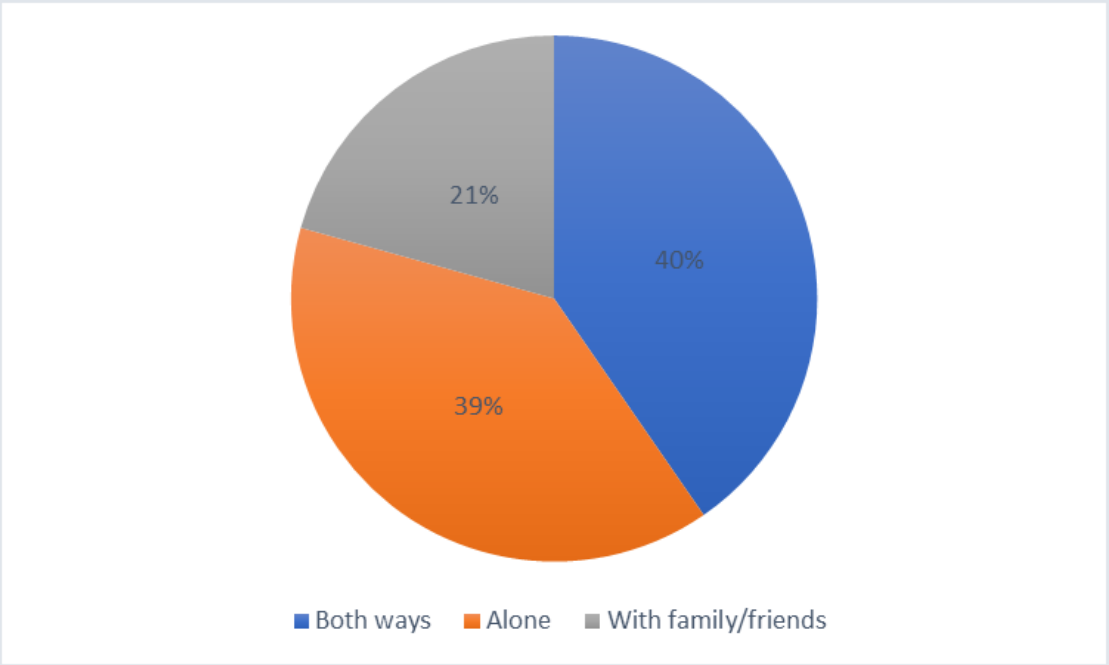
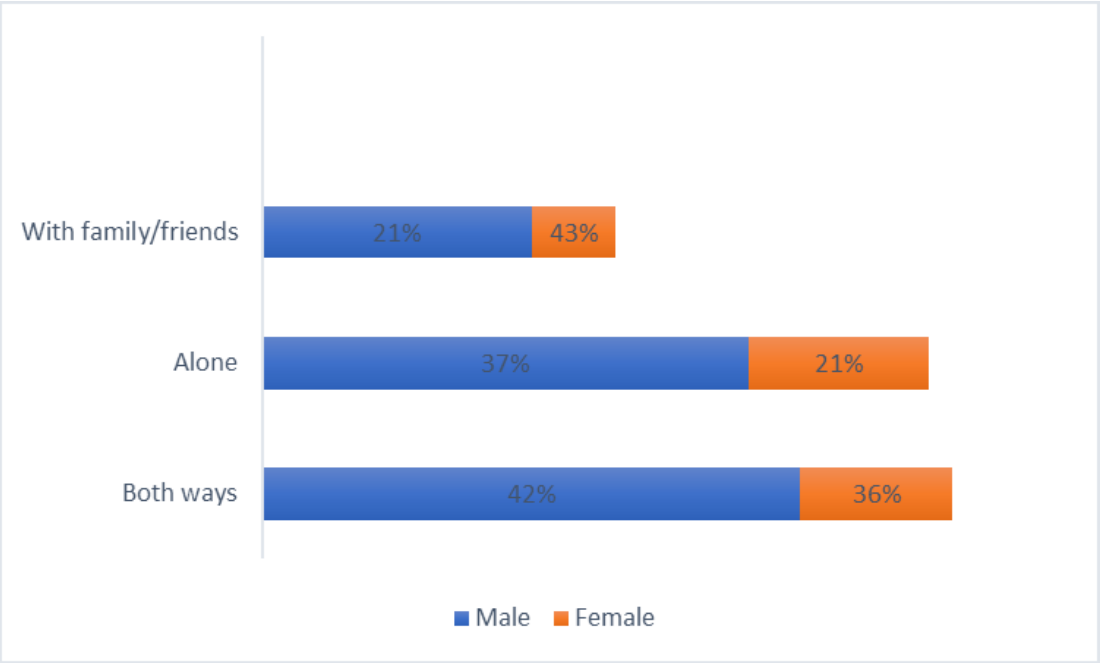


Figure 14 Social playing preferences split by gender



6.2.6. Common ways of taking up video game playing

The data suggest that 41% of gamers surveyed began playing video games because family members (parents, brothers/sisters) were playing video games at home or because they were presented with consoles by family members (parents, grandparents, aunts and uncles) (Figure 9),

"My parents bought me and my brother a console when we were children, and I loved it",

"My father bought me the PS1, and we played together",

"I saw my brother playing with his ps1, and I wanted to try it too."

Twenty-four per cent started playing through friends:

"Tried them once at a friend's house and then continued because of my own interest",

"My friends had the PSP, so as a good kid, I wanted to do what my friends did."

Some players (20%) had a prior interest, *"own interest from early years",* which was usually accompanied by having a console at home,

"I started on my own when they brought the Megadrive home."

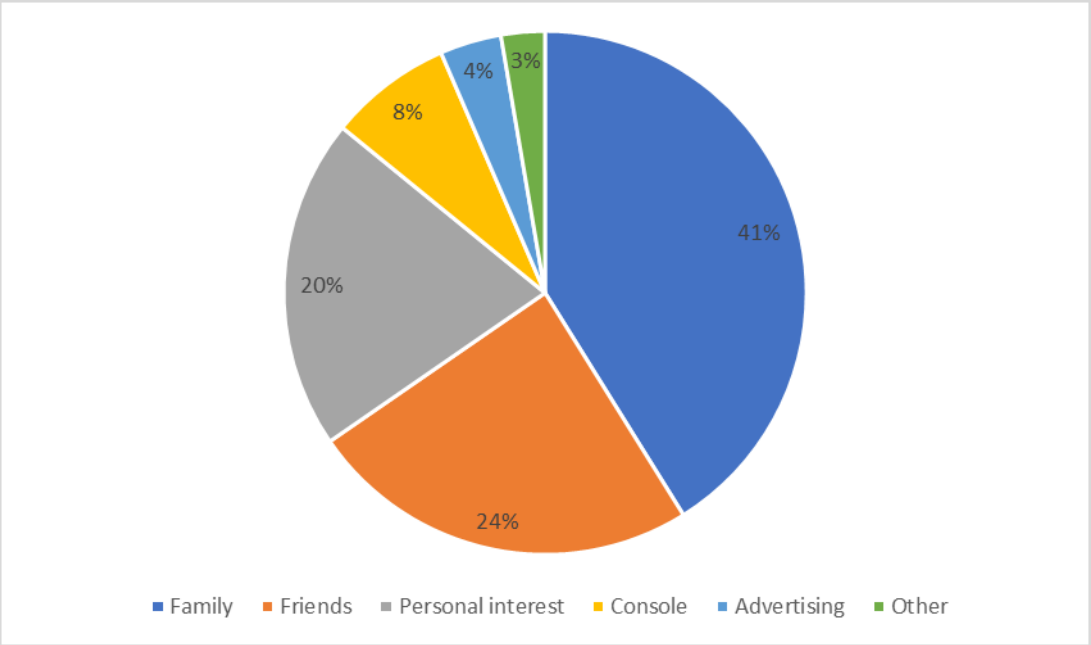
Only 4% mentioned advertisements as the primary stimulus for getting into the world of video games:

"Advertisements on web pages like minijuegos.com (thanks to that I started to play MMOs seriously). Also, the mass media and animation series like Pokémon, they push you to play Nintendo consoles."

Other reasons that fuelled interest in video games were, for example, the possibility to play a beloved cartoon character,

"It was interesting to play games like "Aladdin".

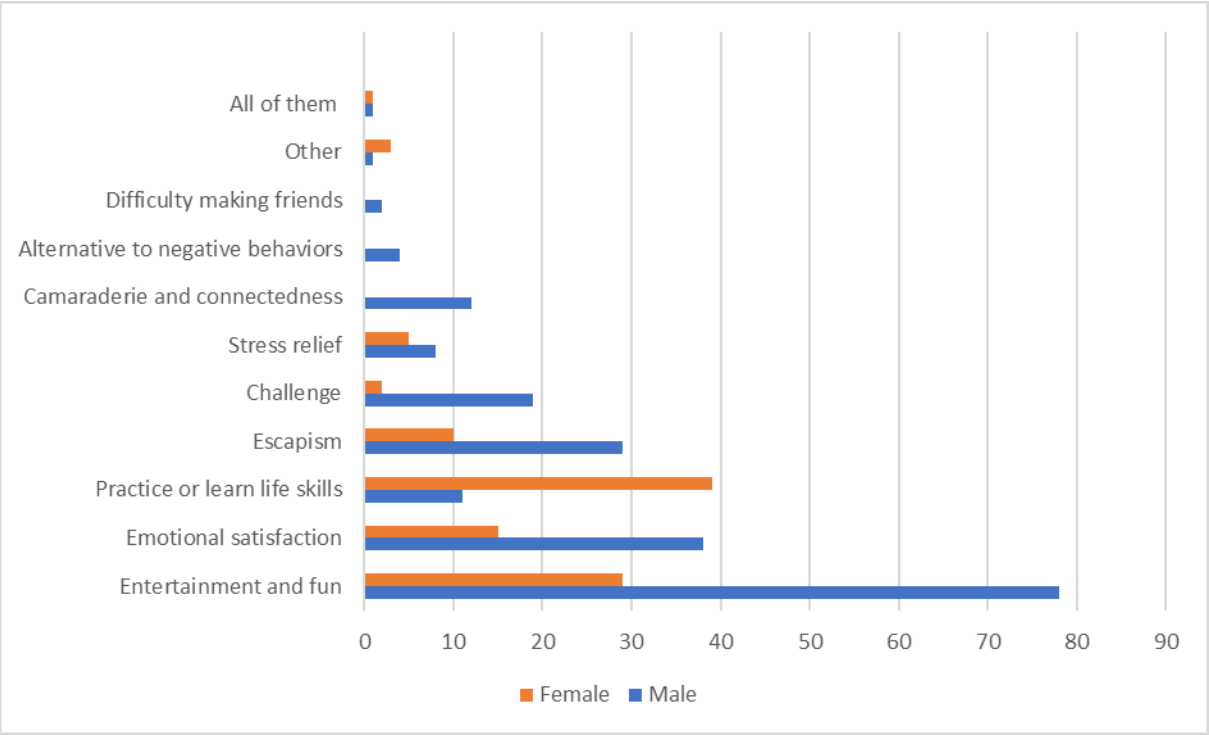
Figure 15 Ways Gen Zers began playing video games



6.2.7. Main reasons for playing video games

Among the main three reasons for playing video games, both sexes mentioned entertainment and fun, emotional satisfaction, and escapism (Figure 12). Among other reasons attracting them to the world of video games, both males and females mentioned difficulties in making real-life friends, and they considered playing an alternative to negative behaviour. Camaraderie and connectedness, and practising life skills seemed to motivate mostly males.

Figure 16 Main reasons for playing video games



6.2.8. Appealing features of the preferred video games

The top features attracting participants to their favourite games include gameplay; graphics, art and animation; and good storytelling (Figure 17). Male players seemed to find multiplayer interaction and communication, user interface and following up/streaming gameplays more important than female players. Female players valued customisation of characters or levels and cross-platform features of the game (Figure 18). Among other attractive features are the difficulty of the levels and the proper length of the game.

Figure 17 Attractive features in favourite games

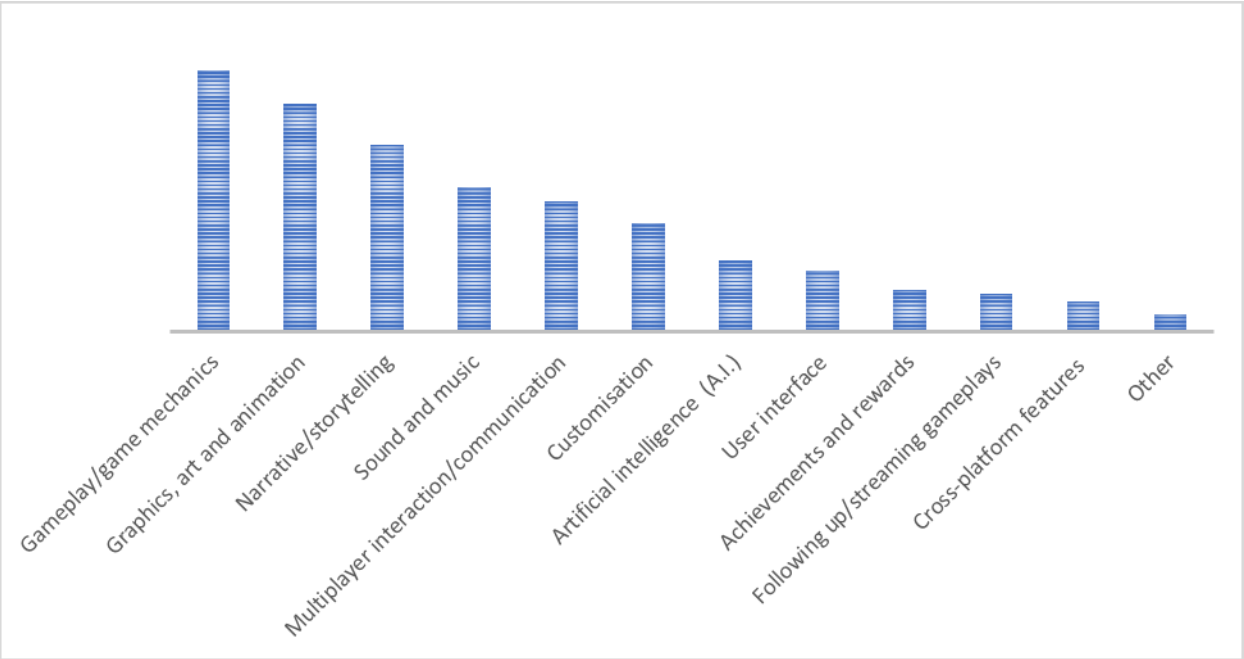
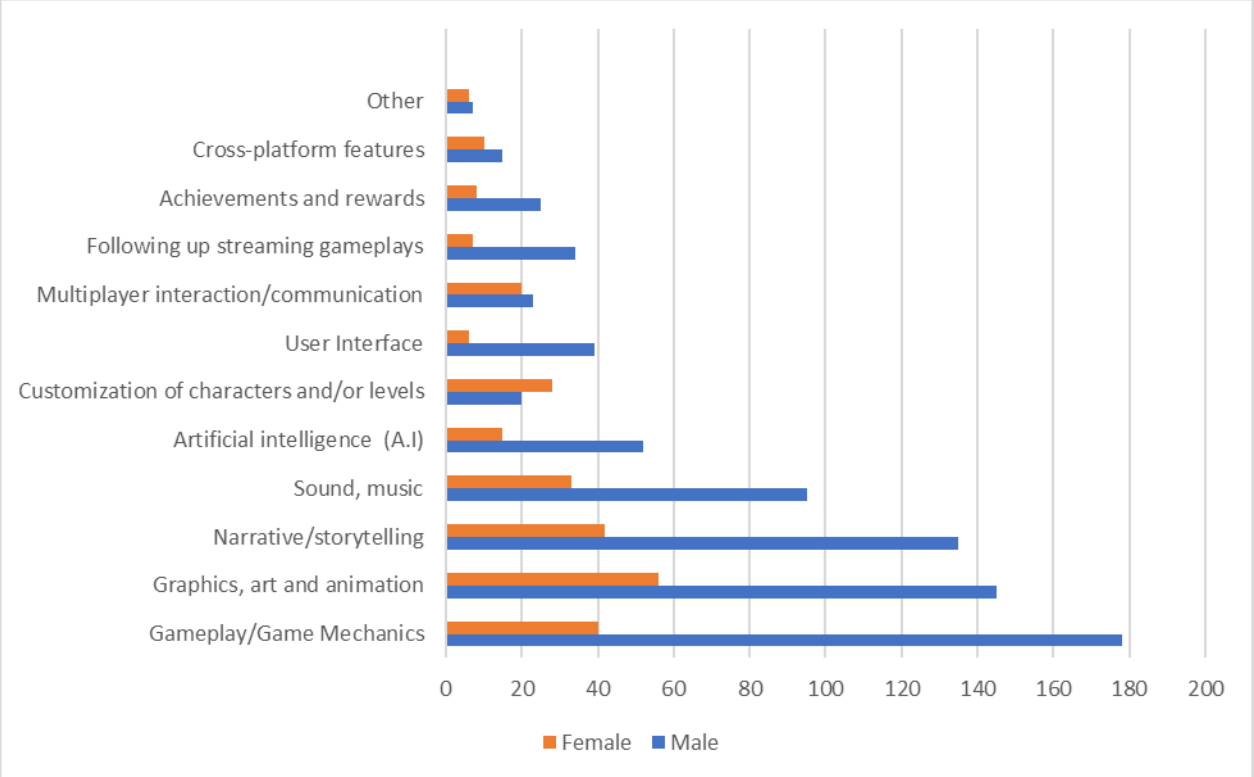


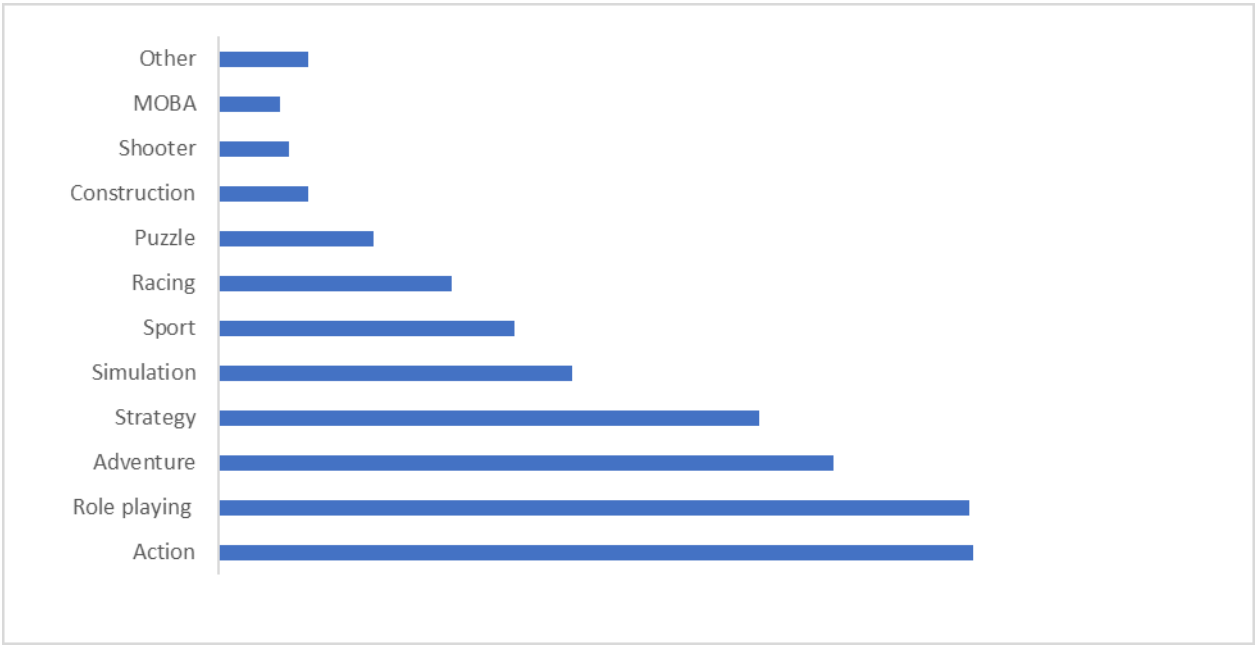
Figure 18 Attractive features in favourite games, by sex



6.2.9. Favourite video game genres[14]

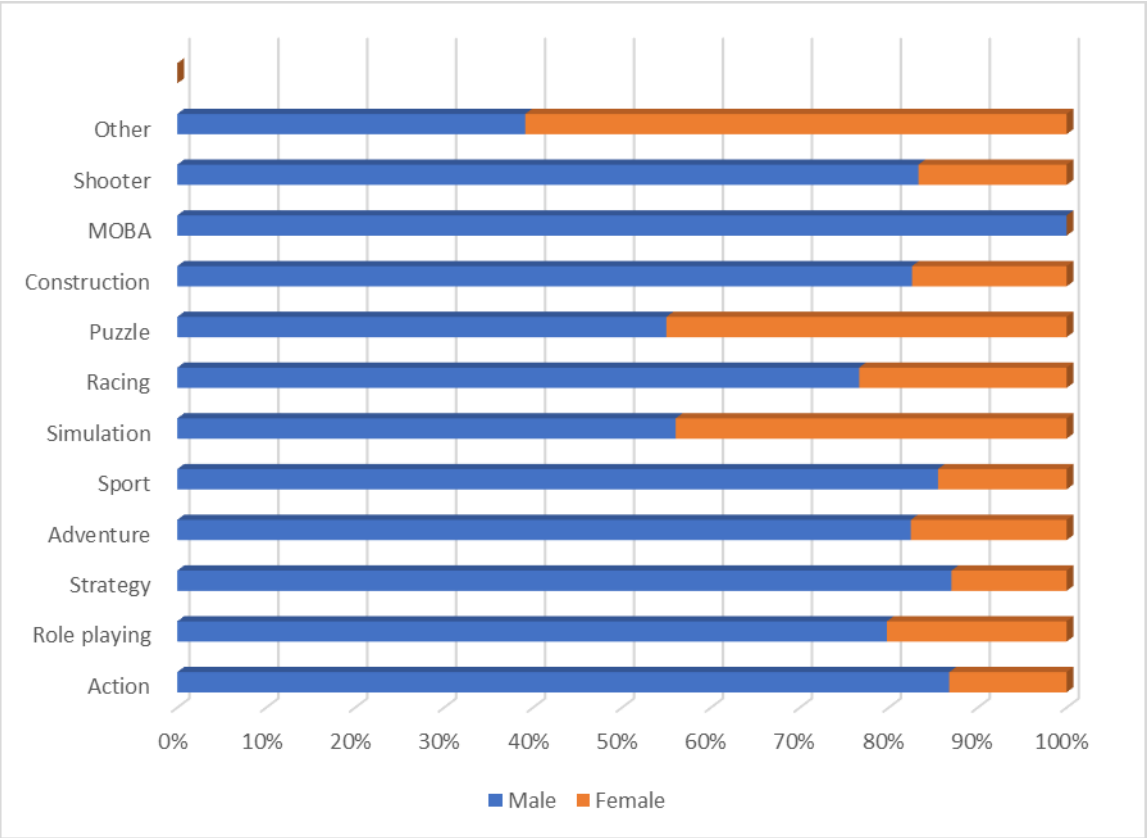
When participants were asked to mention three or four favourite genres, role-playing games, action, adventure, simulation and adventure topped the list. The top genres among male players were action, strategy and sport, while female players favoured simulation and puzzles. Interestingly, female players seemed to be more open in playing out of mainstream genres (e.g., social networks, visual worlds and educational games) (Figure 19 and Figure 20).

Figure 19 Favourite game genre



14 The first attempt at classifying video games was made in 1984 (for more, see Crawford, C., The Art of Computer Game Design, 1984). This survey did not provide any genre classification; the question was open-ended, and we let participants mark the genre they thought their favourite game falls into.

Figure 20 Favourite game genre, by sex



6.2.10. The best video game ever played

In answer to the question about the best video game participants had ever played, *GTA 4* and *GTA 5* received the most mentions, with *Dark Souls*, *The Witcher* and *Last of Us* coming in second, followed by *Legend of Zelda, Final Fantasy* and *Bioshock* (Figure 21). *The Elder Scrolls V: Skyrim* and *Pokémon* close the list. Respondents named *Witcher 3* as the best in the *Witcher* series and *Final Fantasy XI* and *X* as the best in their own saga. While males chose to play different variations of action games, females did not stick to one particular genre (Figure 22 and Figure 23).

Figure 21 Players' best-ever games

Statements by male participants on their best-ever games,

"GTA V: you are free to do almost anything you want. It's like a game that includes all other games in it",

"Dark Souls. Because it lets you discover its world and its mechanics instead of guiding you constantly as most games do nowadays",

"Final Fantasy VI, I really liked the story and characters, especially Kefka Palazzo, the main villain. The game has amazing music and a really good old-school turn-based combat. The pixel-art of the original NES version (The newer Steam one is abysmal) is amazing",

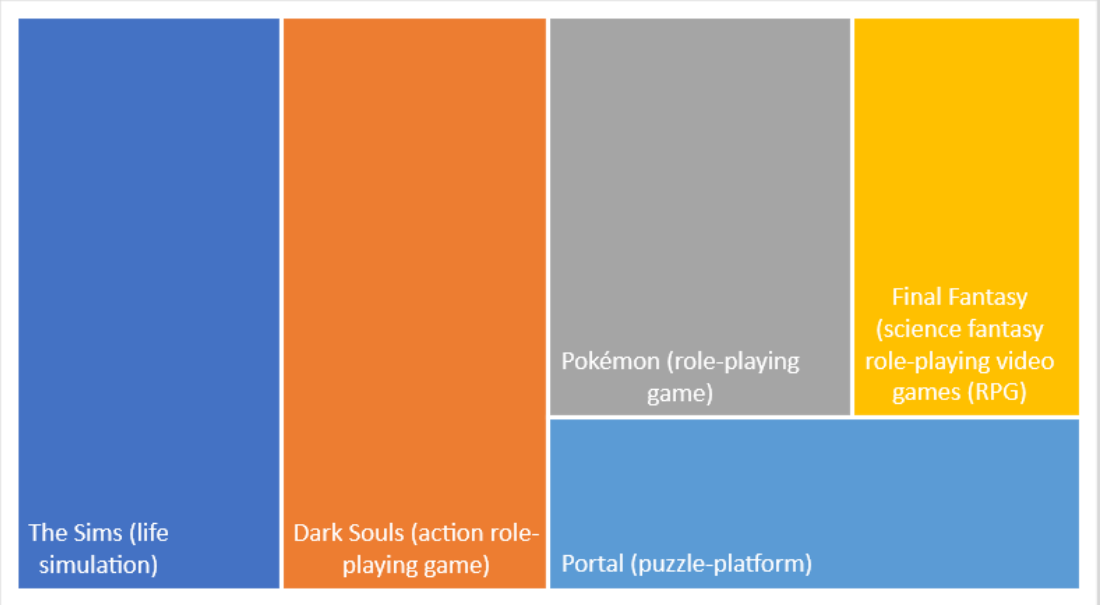
"Kingdom Hearts is my favourite video game, it had a great impact on me and the way I am Today few titles can be compared to the sensations that KH made me live",

"TES VI: Skyrim. Graphics with beautiful and varied landscapes, open world, decision making, many varied adventures and very high content in characters and features in a world that is very alive",

"I hate this question :) If I have to choose I would say Final Fantasy VI. Good gameplay, memorable characters and narrative, perfect soundtrack and beautiful art. Also nostalgia probably."

Figure 22 Top 5 of male players' best-ever games

Figure 23 Top 5 of female players' best-ever games



Female players on their choices of best-ever games,

"Portal 2. It was the game that made me realise that video games are art",

"Personally, Kingdom Hearts 2 is one of the games I enjoyed the most because of its character design, great storytelling in every single video game of the saga and it makes a good connection between all the worlds inside it",

" The Pokémon series They have good stories, good character designs and easy playability",

"The Sims 2, fully editable and user-defined."

At the end of the survey, we also asked a question, *"What three games would you save if tomorrow all games are destroyed"*. Male players' answers mostly coincided with their choices of best-ever games played. The male Top 3 was:

1. GTA 5
2. Witcher 3
3. Last of US.

The female list included *Mario*, which does not feature in the female Top 5 best-ever games played:

1. The Sims
2. Kingdom Hearts
3. Mario.

6.2.11. Favourite protagonists

The top favourite protagonists were Link from *Zelda,* Gerald of Rivia from *The Witcher*, Sora from *Kingdom Hearts* and Kratos from *God of War*, followed by equal mentions of Solid Snake from *Metal Gear*, Joel from *Last of Us*, Nathan Drake from *Uncharted*, Ezio Auditore from *Assassin's Creed* and Mario from *Mario* (Picture 5). Interestingly, Link received equal mention as a favourite protagonist from both female and male audiences. Around 15% of respondents said they didn't have any favourite protagonists. Among the adjectives players attributed to their chosen protagonists were *"wise", "epic", "goal-oriented", "charismatic", "mysterious"* and *"noble"*. Some respondents provided detailed explanations of their preferences,

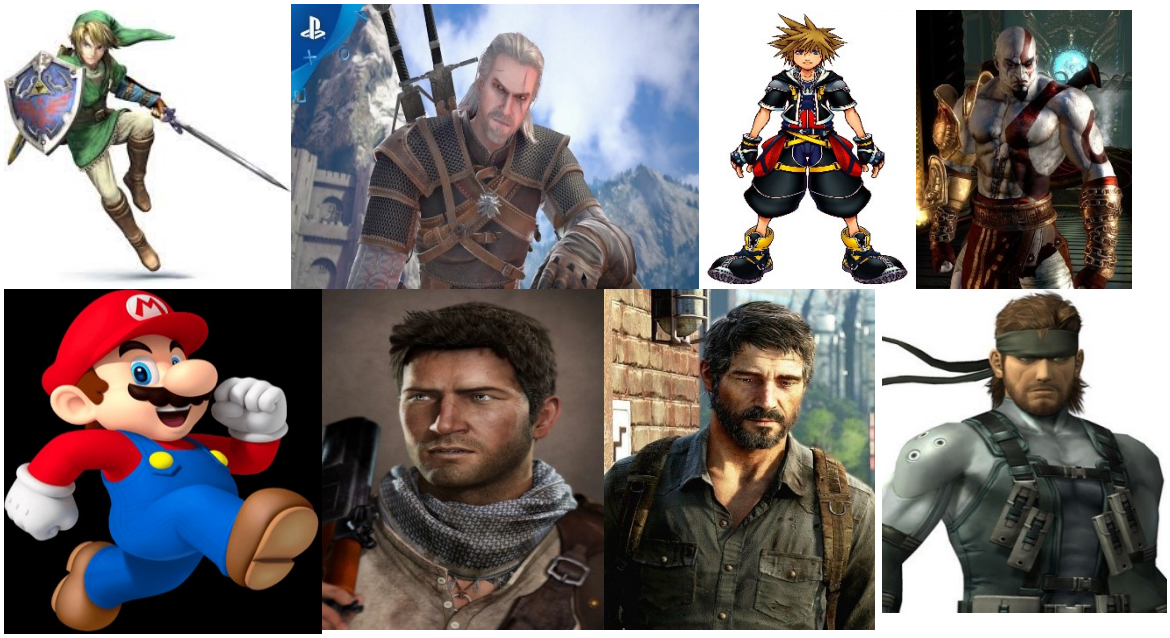
"Batman is one of the best Heroes who does not have any unique abilities",

"Captain Shepard (Mass effect) because he can save the world through self-sacrifice",

"HITMAN, because he just does his job",

"Jason Brodie, the character of the game Far Cry 3. A regular guy who is not really special, but he takes on much responsibility and sets the ultimate goal of saving his friends."

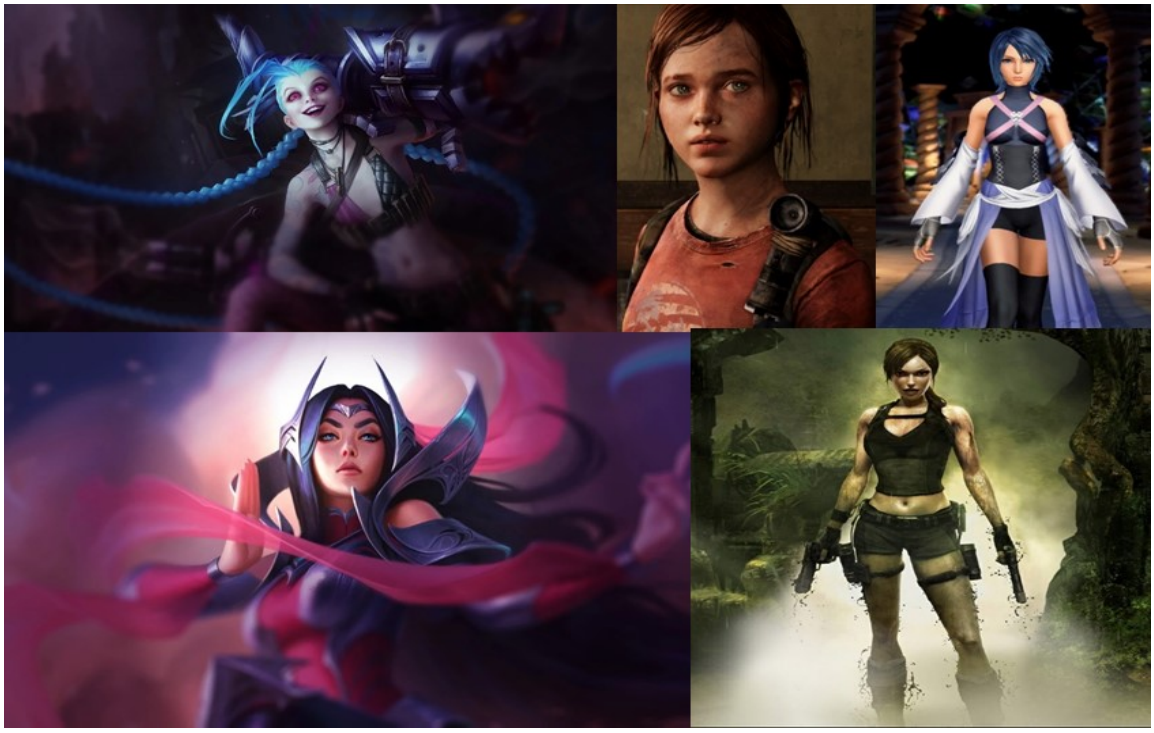
Picture 5 Top favourite male protagonists. Screenshots from the games



The few female protagonists mentioned by both male and female players included Aqua from *Kingdom Hearts*, Ellie from *One of Us*, Lara Kroft from *Tom Raider*, Jinx and Irelia from *League of Legends (*Picture 6*)*,

"Irelia, from League of Legends. She is a strong leader and never gives up."

Picture 6 Top favourite female protagonists. Screenshots from the game.



Female players named mostly male characters as their favourites, with Link from *Zelda* getting the most mentions, followed by Mario from *Mario.*

6.2.12. The most memorable moment in the game

The majority of respondents stated that a game's ending was the special moment they would always remember (Figure 24),

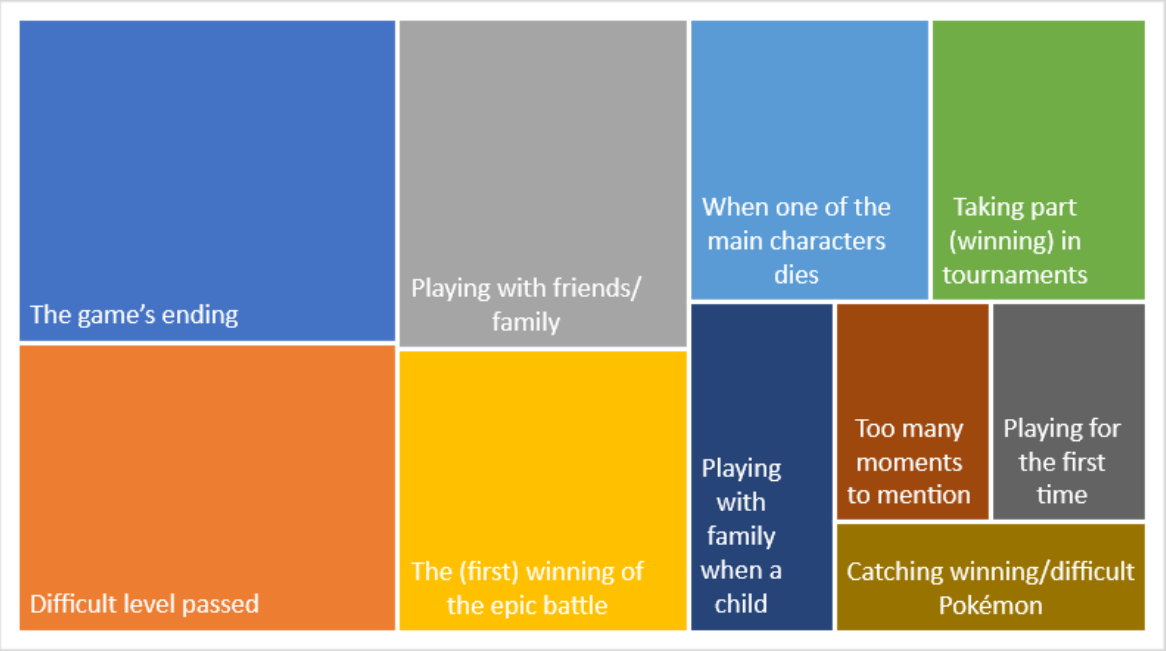
"Cry my heart out at the end of FFVII Crisis Core; I beat Frieza after 20 attempts; or how wonderful but at the same time shocking was the end of The Last of Us."

Second mentioned was the moment when the player passed a challenging level, followed by the first winning in the epic battle,

"When I completed the Tomb of the Giants for the first time, it's a really difficult zone. Literally there's no light, you must walk really slow, and in the end, you have to beat Nito",

"The moment when I began to like the Dark Souls is when I defeated the demon of Aries."

Figure 24 Most memorable game moments



The male and female Top 5 lists of most memorable moments coincide with one difference: where males remember *"taking part (winning) in tournaments"*, ladies remember *"catching/winning difficult Pokémon"*.

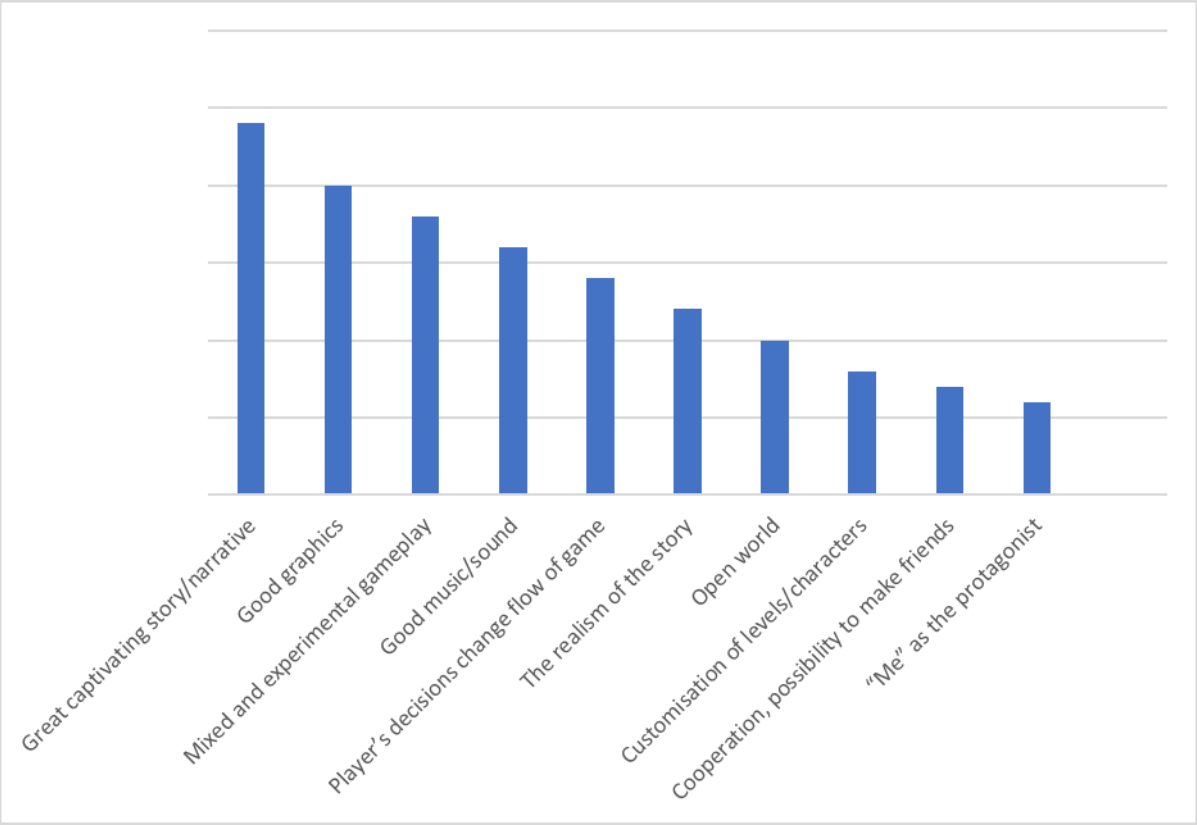
Interestingly, several respondents mentioned remembering the time they played with family members during Christmas,

"During Christmas and New Year's family dinners, the "third-generation"- we usually play Just Dance. In the end, we got parents and grandparents dancing with us, so we had a great time."

6.2.13. The in-game elements players would like to see in future games

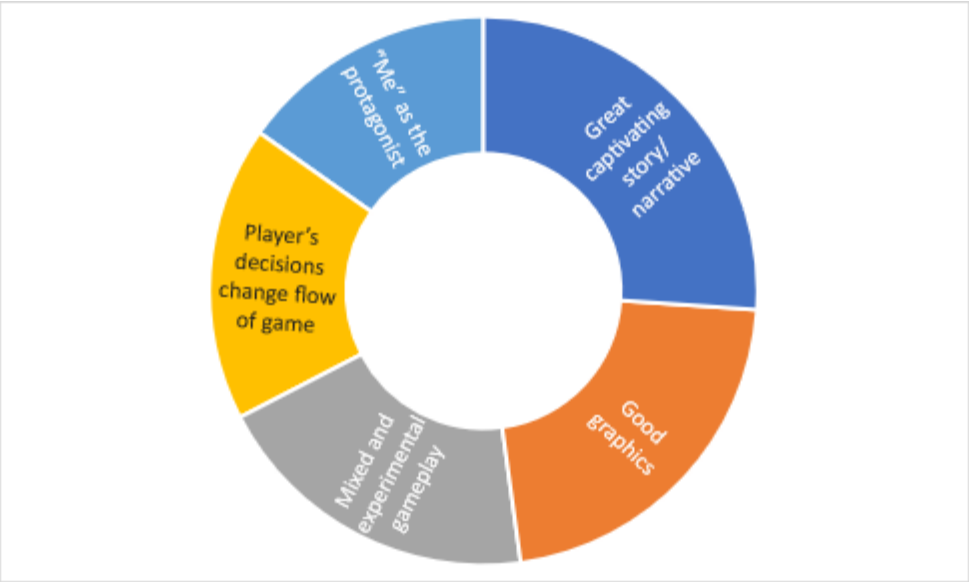
As shown by the data, the absolute leading in-game element, with 26.5% of respondents mentioning it, was a great captivating story and narrative, followed by excellent graphics, and mixed and experimental gameplay. Figure 25, Figure 26 and Figure 27 present the elements players are looking for in future games.

Figure 25 Elements players are looking for in future games



Among other desired in-game elements that were not included in the list but had been mentioned by responders were elements of science, education, politics, proper length, no hardware limitations, and advanced AI.

Figure 26 Male Top 5 desired in-game elements



Male players' suggestions for elements they would very much like to see in video games,

"Open world; action; verisimilitude; and the most difficult one: being able to control the player as fast as I think it, like if the game was a dream. I don't like when in an action video game, like an FPS, I could do a lot of simultaneous things, like looking right, while shooting to the front, while running left, while crouching, ... but because of a hardware limitation, I'm not able to do that",

"A fantastic narrative very well constructed with attractive and deep characters, a story that makes me laugh and cry, and an unexpected ending, without abusing death",

"A good story with a good message that makes the player feel empathy (a good game)",

"Putting the player's morals to the limit, putting him in a world of greys where good and evil are relative, see what route he follows and see how far his moral principles endure",

"To be able to personalise everything: the more, the better",

"More LGTB characters with a good story and with the less mount of cliches possible".

"They tell you something sincere, important, to teach you something useful for life that you have not seen yet, but they do not do it by putting it in your face if you do not use the game experience. That leaves me different after having played it. They let me ask myself questions."

Figure 27 Female Top 5 desired in-game elements

Nineteen per cent of women surveyed called for women to be better represented, and 31% would like games to have captivating, diverse, inclusive narratives. Below are female suggestions for good video games,

"A video game which would teach the player became more tolerant and kinder",

"A good character design based on equality (sexual and racial), an open world with really different places in it and the option of making your own decisions and the game-changing according to that",

"A stronger female protagonist, that doesn't follow clichés and really good aesthetics. Maybe something mixing some techniques (like pixel art with some 3D, etc., more experimental things)",

"Most diverse characters and relationships",

"An open world in which the decisions you make have a true effect on history. With good character customisation. That contains different roles between which the protagonist can choose. Fantastic elements like dragons, magic, and different fantastic races would be necessary. If it were possible, they would be VR and would add an extra that was multiplayer",

"More women (not sexualised, who had a good story that has nothing to do with a man, you understand what I mean)",

"Well done female protagonists, with clear ideas in their heads and whose value in the game was not just being beautiful and showing their bodies",

Some respondents offered concepts of games they would be interested in playing:

"Video game with the possibility of virtual immersion in any country and the study of its language",

"The gameplay is taken from the Warframe and plot from the CD project plus the ability to customise the character",

"I would like a game that would incorporate the realities of modern life and at least take small steps to prepare children for adulthood",

"Video game sequels from when I was a teenager (90s)",

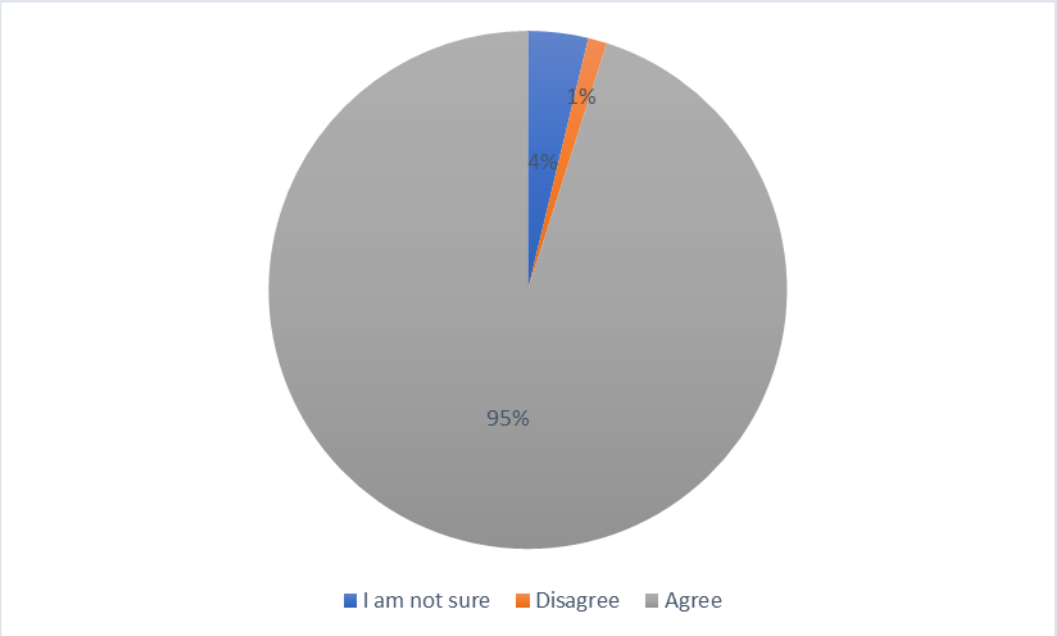
"Jobs simulator",

"A Pokémon Go with another theme, other objectives, with more history, with combats, trade with objects ... come on, an RPG that uses the real world."

6.2.14. Educational benefits of playing video games

The overwhelming majority (95%) of Gen Zers was convinced that video games could be educational for them (Figure 28).

Figure 28 Educational benefits of playing video games



6.2.15. The most significant influence of video games on players

The participants were asked to reflect on the influence video games have on them. The answers are grouped into clusters which are listed below from the most to the least mentioned.

1. I feel entertained and have fun
2. Video games reduce stress and relax me
3. I acquire soft skills[15] and develop my mental abilities
4. Video games influence my tastes, daily and professional life
5. No influence at all
6. Video games help me to escape from reality
7. Video games boost my creativity and imagination
8. Video games impact me emotionally
9. I socialise and make friends
10. I feel happier and morally satisfied

Also mentioned, among other influences, were a feeling of achievement, English language improvement, learning about guns, weapons and horses, and perspective change.

15 Soft skill expression was never used by respondents, it is a term that an author use to encapsulate the skills frequently used by the respondents: leadership, decision-making, logical thinking, patience, time management, optimization, foreign language, teambuilding, communication, focus.

Figure 29 Male Top 5 influences of video games

Male respondents' descriptions of the influence video games had on them (Figure 29),

"It relaxes me, I enjoy playing games, and in some cases, I feel inside the world of the game, just like when I read",

"Depending on the game I'm playing I feel different things, sometimes I just feel like playing games in which I can go explore the world riding a horse to feel relaxed or action games to get energy",

"They have increased my imagination, my reflexes and increased the speed in making hasty decisions",

"Video games make me improve abilities, like my reflexes, or help me to learn languages and to know more about guns, cars, etc.",

"It has changed my way of thinking as well as my personality",

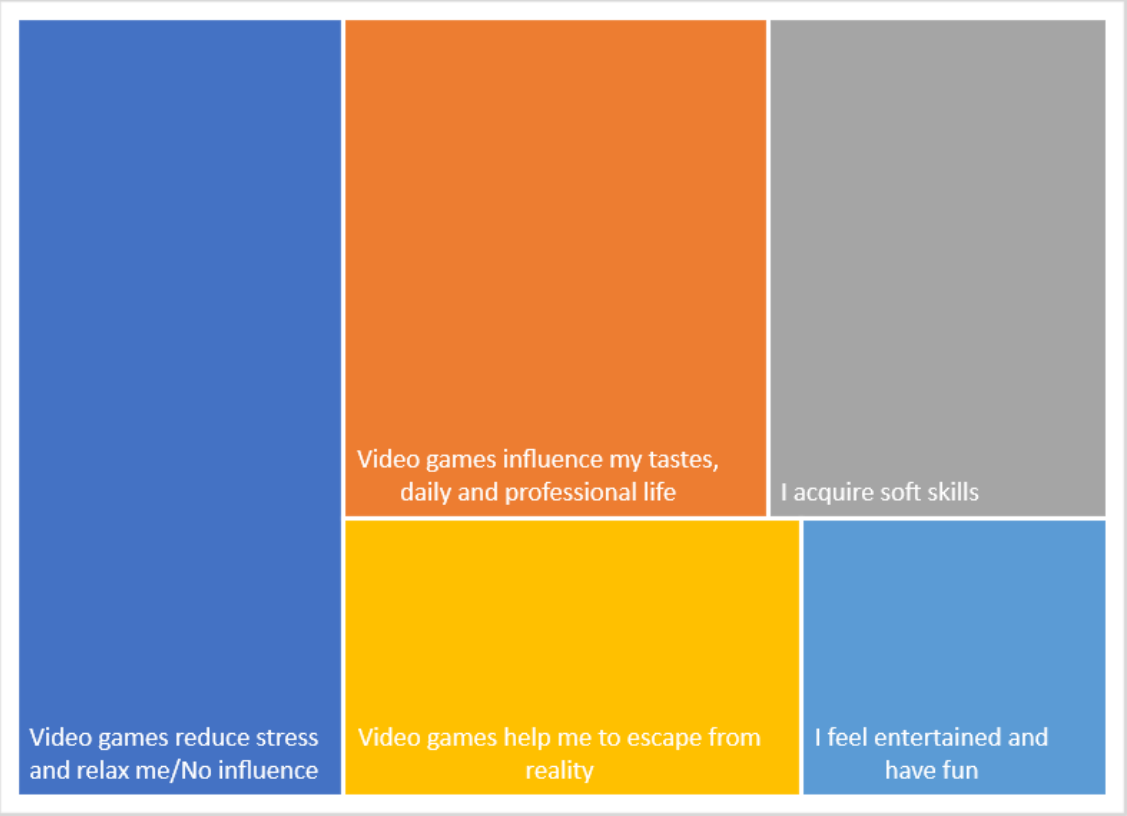
"It allows me to learn a lot and to improve my skills as a human being (creativity, social skills, ethics...)",

"In the first instance on an emotional level, relaxing or activating me, making me laugh or cry at a sad event. Some games, through their narrative, also influence me ideologically".

"Stalker has taught me to be adapted to extreme situations, to be more determined, to be more together, to pursue things more stubbornly to be more attentive."

As for the female list, the two most mentioned influences were stress redundant and no influence at all (Figure 30).

Figure 30 Female Top 5 influences of video games



Female reflections on the influence of video games,

"Huge influence. They made me grow in my life and be what I am today",

"I want to become a concept artist for video games, so they've had a big influence",

"Video games have been a big part of my life. I started to play as a hobby, but when I was a teenager, I realised that I wanted to pursue my career as a concept artist (or any artistic role that has something to do with game development). So, I must say that they have a big influence on me",

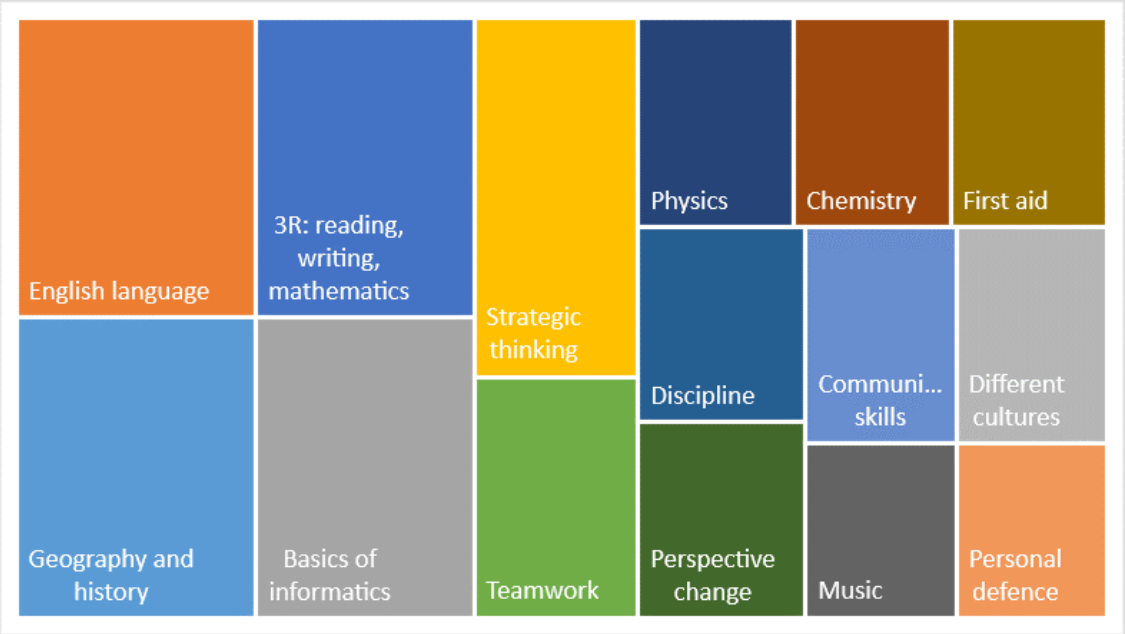
"It wakes up my competitiveness; some of the universes inspire me to create my own art."

6.2.16. Things gamers did not know about before they started playing video games

When the participants were asked to reflect on things they learned from playing video games, the majority said that apart from fun and entertainment, they didn't expect video games to add a lot of practical knowledge to their lives.

Thirty-two per cent of respondents stated they had learned a lot of useful skills by playing video games (Figure 31),

Figure 31 The most-mentioned skills learn



"I started playing video games at a very young age, but over time I realised that I already knew a lot of the things I learned at school thanks to what I read while playing",

"They taught me how to work in a team. Also, I think video games taught me a lot of English words when I was young; I had an advantage over my classmates due to the vocabulary I learnt online."

Thirteen per cent of respondents hadn't expected video games to be so addictive and time and money consuming,

"That u can waste too much time playing them because sometimes u feel the necessity to finished a mission that can need 3 hours to achieve it".

Ten per cent of respondents learned more and grew to appreciate all the work that goes into a good video game,

"A few pixels joined in certain ways on a screen could give so much for so little".

Five per cent learned about themselves, some discovering they were competitive, others that they had leadership skills or empathic abilities,

"Empathy, mainly. Storytelling and fictional characters and a handful of pixels could make me laugh, cry, learn, reflect, doubt, fear and a long list of beautiful things",

"Talk to people. Being a clan chief in Ragnarok Online gave me self-esteem and taught me to be sociable."

Five per cent gained real friends, both online and offline,

"Aside from stories and theories, the games themselves told me about; I learned that games could connect people not only through multiplayer experiences but from offline."

Five per cent started to work in the video game industry,

"I didn't know my dream is to become a game developer :)",

"What at first seemed to be a hobby, has become my future profession."

Two and a half per cent gained the belief that anything is possible,

"Everything is possible, cinema shows us worlds but does not allow us to visit them or to live adventures in the first person. Video games take you to other galaxies, allow you to live a thousand lives and face challenges that show you that if you can dream it, you can create it",

"I did not know that everything is achievable (I mean, I was told that, but I got to experience it myself) … I didn't know that video games made you think about important things such as the meaning of life or why we are here or why does even life exist."

6.3. Discussion for video game developers

This study took an in-depth look at Generation Z gamers' video game preferences and their expectations of excellent video game they would be willing to play in the future. It also revealed the educational potential of video games. The survey contained sixteen open-ended questions which asked respondents to write their answers based on their own observations and reflections. Most respondents provided full answers with detailed descriptions and relevant examples where needed. Analysis, grouping and coding took a while, but it led to some fascinating conclusions with practical applications.

Overall, the findings expand to our understanding of Generation Z's view of video games.

Traditionally, the main reason for playing video games is considered to be for entertainment and fun (ESA, 2018). This holds true for Gen Z gamers as well. Additional reasons are emotional satisfaction and escapism. Respondents stated that video games elicit satisfaction, relaxation, anger, empathy, sympathy and immersion. Experiencing varied emotions

in a gaming context may teach people to regulate emotions and to cope with them in real life (Granic et al., 2014).

The survey revealed that the most common ways of playing video games were on PC/Mac stations and different types of consoles; 35% used more than two devices, 27% more than three. Clearly, designing video games with cross-platform features could help reach a wider audience.

Talking about their favourite video game genres, male players highlighted action, role-playing and strategy, while female players favoured simulation, puzzles and adventure. This confirms prior findings which suggest that girls tend to like classic board games, card games, quizzes, and puzzles, while boys gravitate towards shooting, sport, and fantasy role-playing (Jansz, 2005). Females consider the life simulator *Sims* the best game ever played. They also avoid competitive games, preferring those encouraging social interaction and communication (Lucas & Sherry, 2004). However, females are more open to trying out a very varied range of game genres that include those typically associated with male players (e.g., team sport and combat) (Tayler, 2003)

The top three features attracting participants to their favourite games were the same for both sexes: gameplay; graphics, art and animation; and good storytelling. Next came multiplayer interaction and following up/streaming gameplays for male audiences, while female players enjoyed customisation of characters or levels. The expectations for great future games are mostly the same for both sexes. Thus, a great captivating story (preferably a non-linear one) that makes one laugh, cry, sympathise, and hate and that has a grand ending (a beloved game's ending ranked an absolute first among its most memorable moments) was a must. Gen Zers are used to enjoying good in-game graphics, music and sound, and they naturally expect these to be high quality.

What Gen Z gamers do crave is real possibilities to change game flow by making choices and (difficult) decisions, open worlds, and maximum customisation and personalisation of the characters and levels. In addition, Gen Zers are looking for meaningful games, games that teach, that are inclusive and offer a diversity of characters and inter-character relationships. Designing games with these characteristics would, therefore, greatly increase their chances of being chosen by players.

Investigating players' favourite protagonists led to several interesting observations. First, most of the protagonists named are strong males, and 100% are white (Link from *Zelda*, Gerald of Rivia from *the Witcher*, Sora from *Kingdom Hearts* and Kratos from *God of War*, followed by

equal mentions of Solid Snake from *Metal Gear*, Joel from *Last of Us,* Nathan Drake from *Uncharted*, and Mario from *Mario*) and the few female protagonists mentioned are white, as well (Aqua from *Kingdom Hearts*, Ellie from *Last of Us*, Lara Kroft from *Tom Rider*, Jinx and Irelia from *League of Legends*). The conclusion, then, is that there is a lack of strong female characters in video games. Secondly, gamers do see all the limitations of video games, software and hardware. They are aware of the sexism present in the games and (more so females than males) ask for the protagonists to be diverse in gender, race, roles, sex orientation, etc. 19% of females Gen Zers are eager to see strong female characters, active participants in the story that are independent and have bright ideas in their heads. Female Gen Zers do not enjoy playing characters who are merely beautiful and sexy and expose all of their body parts. Little has changed since Schott & Horrell (2000) concluded that female players wished gender representation were more balanced and realistic. Video game producers should, therefore, shift their attention away from only males and focus more on both male and female gaming software, especially considering that 52% of Gen Z females consider themselves gamers and almost 8% game gurus.

The idea of personalised game experience has been around for quite some time, but now it goes further, as many Gen Zers, mostly males, asked to be able to perform as game protagonists, “I” as the protagonist. Considering that Gen Zers are sometimes labelled the "iGeneration", with the "I" representing both mobile technologies (iPhone, iPad, Wii, iTunes) and their offering users an "individualised" way of using them, this did not come as a surprise.

Other interesting findings are, for instance, that while the worlds of art and academia are still debating whether video games are a form of art[16], 19% of Gen Z gamers have no doubt that video games are a form of interactive art. This confirms the idea of the leading renowned media theorist Henry Jenkins who claims that video games will become the defining art form of the 21st Century. Also, paradoxically, newspapers abound with headlines featuring parents complaining or expressing worry or even horror at the addiction video games cause in their children and teens, but then we see that 61% of Gen Zers began playing video games because someone from their nuclear family played video games themselves or because they received a console or PlayStation as a present from a relative. Serious video game developers should take heed. For their educational and serious games to gain greater visibility, the first step might be to work with parents because they are the ones introducing their children to the world of video

16 For more see, (Smuts, 2005). Are Video Games Art? Contemporary Aesthetics.

games. Third, although virtual reality (VR) games have not been a huge success so far, Gen Zers would like to see more good games of this type in the near future.

A wide range of studies link video games to the development of language skills, math and reading skills, creativity, problem-solving, concentration and attention span, and increased performance in mathematics, engineering and science (Jackson et al., 2012; Mark Griffiths, 2003; Subrahmanyam, Smahel, & Greenfield, 2006; Uttal et al., 2013; Hubert-Wallander, Green, & Bavelier, 2011). Ninety-five per cent of the respondents in our study are convinced that video games are educational, with 32% reporting acquiring real skills while having fun: reading, writing, mathematics, the English language, the basics of informatics, strategic thinking, geography and history, teamwork, physics, chemistry, music, first aid, perspective change, etc. Together with the acquisition of the whole set of "soft skills" (leadership, team building, communication, etc.), the development of mental abilities is the second most mentioned influence of video games on Gen Z players. The fact that video games are reported by players themselves to produce educational outcomes is reassuring when considering that millions of gamers worldwide play video games for approximately three billion hours every week. Finally, 5% of respondents stated that their career choice is was the result of playing video games. This confirms the idea that video game playing promotes fascination with technology and technology-related fields (Herz, 1997).

6.4. Summary of Chapter Six

The present study expanded on previous literature by examining the tastes of digital natives. Its findings might be useful in modifying games and game elements and features in serious and educational games dealing with social topics. Results may also provide insight into how to best maximise adherence by designing games that take into account individual differences such as sex. Finally, this information might be used to create educational and serious games that would still provide Generation Z players with the entertainment and pleasure they often derive from playing AAA titles. Moreover, it is reported by players themselves that video games produce educational outcomes such as learning of languages, cultures, history, perspective change and enhancing communication and leadership abilities. This knowledge, in turn, supports one's cultural literacy.

In conclusion, the ultimate objective of this thesis is to develop educational technologies based on interactive virtual environments that mediate learning processes, particularly in intercultural, diversity and inclusive education. Any type of educational tool should be designed,

taking into account the preferences of its users. The study of this chapter contributes to a better understanding of video game players' specific preferences and expectations as articulated by gamers themselves. Obtained results are taken into account when designing a serious game for intercultural education presented in Chapter Seven.

Part III: Video games as a new medium of cultural literacy acquisition

Chapter Seven: The conceptual design of an educational digital game for intercultural education

In the Ludic Century, everyone will be a game designer.

Eric Zimmerman

The science of learning has shown that humans learn more effectively via active learning than via passive learning (Schank, 1995). There can, therefore, be no doubt that educational video games reinforce the teaching/learning process, "already nobody doubts learning can be achieved by playing" (Gros Salvat, 2000). The characteristics of engaged learning are not only desirable but a necessary component for education in today's world because it allows students to employ critical thinking skills, analyse, evaluate and synthesise in order to make decisions and determine the course of their actions (Dickey, 2005).

In this regard, serious games, i.e. those not primarily meant to entertain, offer unique possibilities for creating educational tools for intercultural communication. Serious games allow experimentation in controlled environments, something that can, for example, be useful for simulating interactions between culturally different participants. Serious games can also be used as persuasive tools to influence players' ideas and behaviours. The five-year compound annual growth rate for game-based learning products on the planet is 20.2%, and revenues are expected to double to $8.1 billion by 2022 (Adkins, 2017).

However, approximately one-third of games still rely on questions and answers (Q&A) dynamics, promoting both decontextualised learning and the development of basic cognitive skills (Fabricatore & Lopez, 2012). This approach shows that the designers of these particular games are more focused on retaining their traditional learning methods and simply embedding them in ludic contexts than on properly integrating learning processes into the dynamics of gameplay. Such an approach yields overly education-centred products that fail to make games sufficiently fun and engaging for players. Intercultural games should be so entertaining that players want to play them even outside of formal educational settings.

Moreover, the evidence presented in Chapters Three, Four, Five and Six suggested that a digital game could indeed be an effective resource to make students engage with a complex subject such as cultural studies, diversity and inclusion education. Serious games allow experimentation in controlled environments, thus, this chapter based on findings from previous chapters is offering a conceptual design of a serious games that aims to raise cultural self-awareness (essential element of cultural literacy), to identify biases and stereotypical thinking, to clarify the difference between expatriate, migrant and refugee, and to practice diversity and inclusive team-building skills (inclusive mindset helps to be effective agent of change).

7.1. ATMSG model as a background of *Chuzme* design

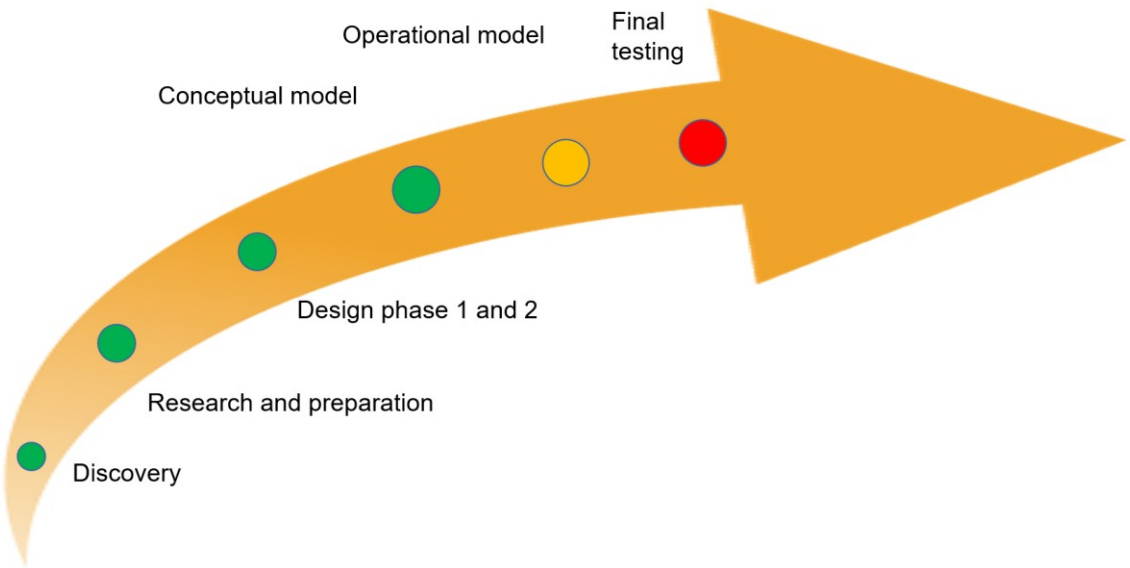
Several frameworks have been developed to cater for the development of video games in both general and particular cases. The two best-known frameworks are the Mechanics, Dynamics and Aesthetics (MDA) (Hunicke, Leblanc, & Zubek, 2004) and the Design, Play and Experience (DPE) frameworks (Winn, 2007). Others have taken a more particular approach, including characteristics of educational games, elements of effective video game design, learning theories, learning outcomes, and gender preferences (Dondlinger, 2007). In an attempt to develop mechanics that relate to the real world concept, Dickey (Dickey, 2005), for instance, distinguishes three main elements of interactive design: (a) setting; (b) roles and characters; (c) actions, feedback and affordances.

Different researchers have attempted to define the structure of video games. Ralph & Monu (2015) argue that the main elements of a video game are technology, story and playability. Shell's Elemental Tetrad (Schell, 2008) defined aesthetics, mechanics, technology and story as the four basic components of a video game. Harteveld (2011) proposed the Triadic Game Design model, which considers three main aspects in the design of a video game: meaning (how players interpret the game), reality (where the game takes places) and play (the game-playing experience). The Hierarchical Activity-Based Scenario (HABS) framework examines games from the point of view of the game's narrative and players' experiences and behaviours, helping designers in defining levels of the user experience when modelling game scenarios, narratives and set of ideas and concepts for gameplay (Marsh, 2010; Marsh & Nardi, 2014). The Four-Dimensional Framework (de Freitas & Oliver, 2006) postulates four dimensions of learning processes that need to be considered: learner modelling and profiling, the role of pedagogic approaches for supporting learning, the representation of the game, and the context in which learning takes place. The Game-based Learning Framework (van Staaldunien & de Freitas, 2011) focuses on immersive learning experiences and aims to bring together a number of

different learning frameworks and models. Marfisi-Schottman, George, & Tarpin-Bernard (2010) presented a seven-step method for designing serious games (SGs) showing the different actors and tasks to be accomplished along with a set of multi-view tools to support these tasks. The Learning Mechanics and Game Mechanics (LM-GM) model (Arnab et al., 2015) provided a clear graphical representation of the game flow as the basis for establishing the relationships between the components that translate pedagogical practices ("learning mechanics") into concrete game mechanics and a predefined list of elements to support the analysis. A modified version of LM-GM, the Activity Theory-based Model of Serious Games (ATMSG) was elaborated by Carvalho and colleagues (Carvalho et al., 2015) and later extended by Callaghan and colleagues (Callaghan, McShane, Eguíluz, & Savin-Baden, 2018). It uses the conceptual framework of activity theory to understand the structure of serious educational games connecting the components of a serious game and its educational goals.

When designing *Chuzme*, all of the above models were reviewed to identify the one best suited for the project. After careful consideration, to support *Chuzme*'s game design phase, the ATMSG model was chosen for its complex and dynamic view on serious games, while the overall design process was guided by the serious instructional design process, developed by Becker & Parker (2011) as a combination of simulation design (SD), game design (GD) and instructional design (ID). The serious instructional design process consists of six phases. The first phase, "Discovery", encompasses the needs analysis and rough outlines for framing the project in its proper context. This phase identifies the game's main objectives and premise and also develops a general understanding of who the game's intended users are, how these users will obtain what they need, and how one can know that they have. During the second phase, "Research and preparation", materials and facts are gathered, and limitations and original systems are defined. Figure 32 summarises two chosen models. This chapter describes the first four stages.

Figure 32 Game design process (adapted from Becker & Parker (2011).



The third phase, "Design phase 1 and 2", is where the game takes shape. Here, the Activity Theory-based Model's perspective is used (Callaghan et al., 2018; Carvalho et al., 2015). In this model, educational SGs are intricate, dynamic systems composed of three main activities—playing, learning, and teaching—and they have two subjects—the learner (player/student) and the instructor (responsible for game design and development). These subjects have different motives (e.g. have fun, fulfil a course requirement, or engage students). ATMSC's hierarchical structure focuses on different levels of detail, providing a flexible tool to analyse and design interaction and gameplay, dividing activities into actions and the game itself into smaller pieces (Callaghan et al., 2018; Carvalho et al., 2015). Figure 33 describes the five-step approach to applying ATMSC.

Figure 33 Five-step approach for applying ATMSC (adopted from (Callaghan et al., 2018; Carvalho et al., 2015)).

During the fourth phase, "Conceptual model", detailed design documents are elaborated (pre-programming). Then follows the fifth phase, "Operational model", which is where the programming of the game takes place. The sixth and final phase, "Final testing", may be listed as a separate phase of the model, but the testing should actually start as soon as the first playable prototype is ready. These phases propose an overarching framework comprising conceptual and technical frameworks for enhancing intercultural skills.

There is the temptation for beginning game developers to jump right into a project and start writing code and drawing pictures. This is a mistake because unless there is a clear direction for the project, their work will be poorly focused. It is hard to design a full-fledged game that tackles intercultural issues and is a huge amount of fun at the same time. Still, it is possible to deal with these issues through short games that take, for example, up to ten minutes to play. Such games could be effective and inexpensive tools. *Chuzme* is meant to be one such game, and this chapter takes a detailed look at the first three stages of its AR video game design.

7.1.1. A set of rules providing a guideline to create or improve serious games.

Chuzme was created following the set of rules developed by Baaden et al. (2018):

Rule 1: Setting a (serious) goal

Rule 2: Balancing entertainment and serious tasks

Rule 3: Enabling player interaction with scientific data

Rule 4: Promoting onboarding and engagement

Rule 5: Managing the information flow

Rule 6: Constructing an appropriate narrative

Rule 7: Adapting the level design

Rule 8: Developing good graphics to increase player immersion

Rule 9: Using all modalities

Rule 10: Assessing what works and what does not.

7.1.2. Phase 1 "Discovery"

7.1.2.1. Why design a video game about culture, diversity and inclusion?

The world has changed from a "command-and-control" model towards one with leaders who can coach and empower, a skillset few professionals possess. Yesterday's solutions won't solve tomorrow's problems, so having an adaptable mind is imperative in today's ever-changing world. Moreover, the rise of Artificial Intelligence (AI) is only making soft skills increasingly important as these are precisely the type of skills robots cannot take over. As a result, strengthening a soft skill, therefore, is one of the best investments one can possibly make in one's career. It is also why 57% of senior leaders today say soft skills are more important than hard skills. Collaboration, people management, adaptability, coordinating with others, these are the soft skills companies are most looking for in the 2020s, because, in the age of AI, projects grow increasingly complex and global, and effective collaboration becomes correspondingly more important (Spar & Dye, 2018; World Economic Forum, 2016). Furthermore, a hot topic for the new millennium is how expertly use cultural differences to increase wealth, in the context of worldwide economic integration (Bateman, 2009).

Cultural diversity

Globalisation, talent flow, forced migration, and family reunification result in a culturally diverse society. For example, it has been predicted that by the year 2050, racial and ethnic groups will make up 48% of the total United States population, with today's minorities being the majority in America (Shrestha, 2006). Taking this into account, since the beginning of the 2000s, the most successful companies have been putting workplace diversity high on their list of priorities. Diversity touches the core of the human experience because every person has a deep-rooted cultural awareness. People continue to appreciate the richness of their own cultures, but

the pure essence of diversity is to create an atmosphere of creativity and inclusion, to take the best of all cultures recognising their place and giving them a voice.

A diversity-inclusive environment is one in which a team of professionals put their differences to creative use, taking advantage of the opportunity to translate the myriad new ideas into best practices and thus increasing innovation, retention, and market share.

To say that cultural difference creates a development style is a perfect example of what is called cultural sensitivity (Bennett, 1986). The basic idea is that people from different cultures approach the world with different ideas about how to think, feel, and interact—moral, emotional, and aesthetic assumptions. One can be aware of other cultures and know that they are different from one's own, but one cannot acquire another culture's cultural sensitivity without being from that culture.

As a buzzword, *"diversity"* sounds good, but discussing race, gender, and discrimination frankly can take many people out of their comfort zone. Having a diverse workforce inspires creativity and innovation, reaches a wider and more diverse customer base, increases employee retention and helps make the company a great place to work. It can be argued that whereas diversification deals with financial assets, diversity deals with cultural and human capital assets (Bateman, 2009).

How to create a diverse work culture at a company? What does a culturally inclusive work environment look like? If you have never had experience of a particular culture, game developers can vicariously give it to you. Creating a culture that celebrates diversity and inclusion is a process that takes time, though

Unconscious bias

According to cognitive science, the unconscious part of the human brain can process an estimated 11 million pieces of information per second, of which we can only process forty consciously (T. D. Wilson, 2002). This makes us 99% unconscious, and this lack of awareness means that we do not realise how biased we are. Unconscious bias affects our day-to-day thinking, impacts hiring and evaluation processes, and contributes to the lack of workforce diversity. A small amount of bias can have a huge effect. Few would admit this, though.

Unconscious biases are the attitudes and stereotypes that affect our views, actions, and decision-making ability. Our experiences shape who we are, and our characteristics—race, ethnicity, gender, height, weight, sexual orientation, place of birth—and other factors influence the manner in which we look upon the world. Cognitive science tells us that people tend to

ignore clear evidence and even act against it when it conflicts with their notions of how the world works, and cognitive linguists have shown how people's largely unconscious mental frames shape how social issues are discussed. Mental framing happens when people naturally "locate, perceive, identify, and label events and occurrences, thus rendering meaning, organising experiences, and guiding actions" (Bekkers, 2015).

Furthermore, Daniel Hamermesh, in his "Beauty Pays: why attractive people are more successful" (Hamermesh, 2013), wrote that white women are paid more than black women and much more than Latina women, that tall man are promoted more often, and bold men make less than men with a head full of hair. This happens because when someone has an attribute that we find favourable, we subconsciously think that person is good and, of course, we want to associate with good people. It is this unconscious need to categorise people that leads to the kinds of decisions that favour some and leave others out in the cold.

There is great variety of conscious and unconscious bias in general and cultural bias in particular (Dake, 1991; Douglas, 1978; Rexeisen, 1984). The underlying unconscious bias can be tackled by acknowledging the problem exists, ensuring there is widespread awareness of it, resolving to do something about it, and becoming accountable for one's actions.

Thus, designing a video game that would tackle unconscious bias would help one recognise and acknowledge one's own biases, identify them when making decisions, and prevent potentially wrong decisions based on biased viewpoints. It would help to recognise both the negative effects and the benefits of uncovering bias in decision-making processes and to be more conscious when relating to others. Pinpointing bias is hard but not impossible.

Immigrants, expatriates and refugees

Travel behaviours change, working habits become free-flowing and borderless, many adopt the nomadic lifestyle, and the world's populations become increasingly globalised. Society uses labels such as migrants, expatriates (expats), and refugees. There is nothing wrong with these labels per se. The problem arises when society's perceptions create opportunities for some to apply outright classism and racism (White, 2018).

The word "immigrant" comes from Latin and carries the meaning of removing, of moving in. Related words are immigrate, immigrated, immigrating, immigration. An immigrant is someone who moves to another country to permanently live and obtain citizenship there. An immigrant is permanently changing their residency, with no plans or desire to return to their country of origin. The word "immigrant" often carries negative connotations in the western world, usually being applied to people of colour, especially if they come from developing

countries. This explains why Westerners moving and permanently residing (or obtaining citizenship) abroad refer to themselves as “expats”.

An expat (short for expatriate) is someone who moves abroad for a period of time that is either limited or has not yet been decided. “Expatriate” may be used as an adjective, noun or verb. Derived forms are expatriates, expatriated, expatriating, expatriation, and the noun form is sometimes abbreviated as an “expat”. Originally, an expatriate was someone exiled from their home country, a term derived from the mid-1700s French word *expatriate*, meaning banish. The term expatriate carries the connotation that the person in question will one day return to their country of origin. A business expatriate is a legally working individual who resides temporarily in a country of which they are not a citizen, to accomplish a career-related goal. Expats either relocated abroad by themselves or have been relocated by an organisation or been directly employed by their host country. One could say that “expat” (or digital nomad) is a fancy title for a migrant worker. What distinguishes expats from immigrants is that expats do not intend to become permanent residents or citizens of the country they are living in, but will continue to hold citizenship of their home country. Most expats move to a country for a period of time and then either return home or go to another country.

Thus, if someone moves to another country to do contract work for a year and decides to stay there forever, they shift from being an expat to being an immigrant. The same applies to someone who wants to retire in a country other than the one they were born in: they would be an immigrant because they intend to live there for the rest of their life.

The UN Convention Relating to the Status of Refugees defines a refugee as a person who has crossed international borders as a result of a “well-founded fear of being persecuted” on account of their religious, political, sexual, or other social identity, and whose country will not or cannot protect them or may in fact be the body that is persecuting them (United Nations General Assembly, 1951). Compared with voluntary migrants, refugees usually arrive in more vulnerable circumstances, are less likely to speak the language of the country they settle in, have fewer economic resources, limited social networks, and are more likely to have suffered trauma before and during migration.

There is evidence that people are ill-informed about migration, frequently overestimating the number of immigrants in their country (Dempster & Hargrave, 2017) and underestimating the economic benefits of their participation in the local economy (Taylor et al., 2016). Attitudes towards refugees and migrants are also deeply connected to individual values. Thus, understanding public attitudes towards refugees and migrants is an increasingly important task

for societies that are becoming more diverse by the day. There are quite a few digital games aimed to show the struggle of refugees and evoke sympathy and empathy to them[17].

7.1.2.2. Who is the target player? Bartle's Taxonomy of Player Types

The basis for the Bartle player taxonomy or Bartle player types is character theory and player behavioural patterns, which mean to establish player personality types and their goals and motivations for playing the game (Bartle, 1996).

1. ♦ Achievers are motivated by accomplishing the goals of the game by following the game's rules and accumulating status, loot, and points, winning the various battles within the game. Challenge is the primary pleasure they derive from playing.

2. ♠ Explorers discover the systems that govern the function of the game world, understand their technicalities and uniqueness, and learn how to take advantage of them. Discovery is their primary pleasure.

3. ♥ Socialisers form connections with other players by telling stories, sharing tactics, and working together within the game. Their primary pleasure is fellowship.

4. ♣ Killers compete with others, create chaos, challenge authority and affect the experience for other players. Interestingly, Bartle characterises them as primarily interested in "imposing themselves on others" and includes in this category people who are primarily interested in helping others. Expression and fantasy is their pleasure.

To sum up, Achievers act in the world, Explorers interact with the world, Socializers interact with players, and Killers act on players (Schell, 2008). According to Bartle's research, the average game community consists of 80% Socializers, 10% Achievers and Explorers, and 1% Killers.

In his later book from 2003, Bartle offered an eight-player version of the model that included a third axis of implicit/explicit, "the 4-part version is easy to draw because it's 2D, but the 8-part one is 3D" (Bartle, 2003).

Achievers: Planner (explicit) and Opportunist (implicit)

Explorers: Scientist (explicit) and Hacker (implicit)

Socialisers: Networker (explicit) and Friend (implicit)

---

[17] for overview, see Shliakhovchuk, E. (2018). Using Video Games in Intercultural, Diversity and Inclusive Education. Conference Proceedings of 11th annual International Conference of Education, Research and Innovation. Seville, Spain. 12-14, November 2018, pp.10326-10336

Killers: Politician/"Den Mothers" (explicit) and Griefer (implicit).

As different types of games tend to attract different types of the player; it makes sense for *Chuzme* to focus on Achievers and Socialisers as simple casual games provide these players with the playing experience, they find most meaningful, while more complex games are favoured by Explorers. Of course, these categories are cross-pollinated, and players tend to belong to one primary category but float in between the other types as the game play situation shifts or their mood changes.

7.1.3. Phase 2 "Research and preparation"

7.1.3.1. Augmented reality (AR)

AR has been around since 1990, but only very recently has it hit the mainstream in gaming. The development of new technologies and the rise of the real-world adventure genre are major contributors to the increasing popularity of AR in gaming. AR covers a broad range of technologies or devices that provide an overlaid virtual environment to the user: Microsoft HoloLens, Oculus Rift, PS Vita, HTC Vive, Epson Moverio Glasses, Google Cardboard, and Google Glass, which use major AR/VR platforms and gamedev tools like Unity 3D, Vuforia, Google Tango, Windows Holographic APIs, Oculus Platform, and WebVR.

With AR a player interacts with the real world through their device's camera. This allows them to view and interact with the virtual place or thing against the backdrop of the real world around them. In some cases, the AR game or application will have sophisticated image processing algorithms that identity features. Objects of the real space may then be annotated virtually with other graphics or game options (Lanham, 2017).

Augmented reality (AR) technology conveys a sense of reality and presence that mentally transports users to another time, place, and state of mind. Moreover, players fall into a groove made more robust by its engaging all of the senses. From a cognitive point of view, players do know that the events they are seeing, hearing and feeling are not physically real, but, both consciously and unconsciously, they think, feel and behave as if the events were really happening in a real place. This is why there is a lot of excitement about building virtual worlds and spaces where someone can actually acquire knowledge and skills that apply to the real world. This year Stanford scholars found that people's interactions with a virtual person in AR influenced how they behaved and acted in the physical world (Picture 7) (Miller et al., 2019).

Picture 7 Stanford AR study. Source: Mark Miller and Stanford's Virtual Human Interaction Lab

Considering the successful use of augmented reality by the military, industry, medicine, and advertising, and the success of AR games like Pokemon Go in bolstering civic engagement (Stokes, Dols, & Hill, 2018), *Chuzme* is designed in mind ideally to be AR video game.

7.1.3.2. Serious educational game

A serious video game attempts to achieve a balance between *"fullness"* (entertainment) and *"seriousness"* (behaviour change), thus possessing properties that make it an adequate learning platform (Gee, 2003).

The serious-game genre emerged at the beginning of the twentieth century as a cheaper and more entertaining way of teaching real-world events or processes to adults. The term "serious games" was coined by American academic Clark Abt, who named his influential book this way (Abt, 1987). Video game designers Sande Chen and David Michael defined a serious game as a game "in which education (in its various forms) is the primary goal rather than entertainment". Alvarez, Djaouti, & Rampnoux (2016) further defined a serious game as a device, digital or otherwise, whose initial intention is to consistently combine utilitarian aspects with playful means. Altogether, serious games are digital games designed not for commercial or entertainment purposes but rather for training users on a specific skill set. Serious educational games (SEGs) juxtapose serious games by targeting K–20 content knowledge, allowing teachers and students to connect common school content with real-world scenarios (Annetta, 2010). These games are usually privately funded for specific uses (Rabin, 2010).

Modelling dynamic social issues to simulate reality takes the real design and engineering skill, and it can be downright difficult to accurately represent science, knowledge or social issues and still sufficiently engage players to hold their attention (Kelly et al., 2007). Serious and educational game designers need to find a trade-off. Increasing system realism allows a deeper message to be communicated, but this decreases the fun part of the play experience, and thus, fewer people will want to play the game. Conversely, increasing fun play experience leads to more people willing to play the game but comes at the cost of decreased system realism (Swain, 2007). Games are about verbs, not nouns, things you can do, and many educational computer games are just much more limiting than their entertainment counterparts (Koster, 2013).

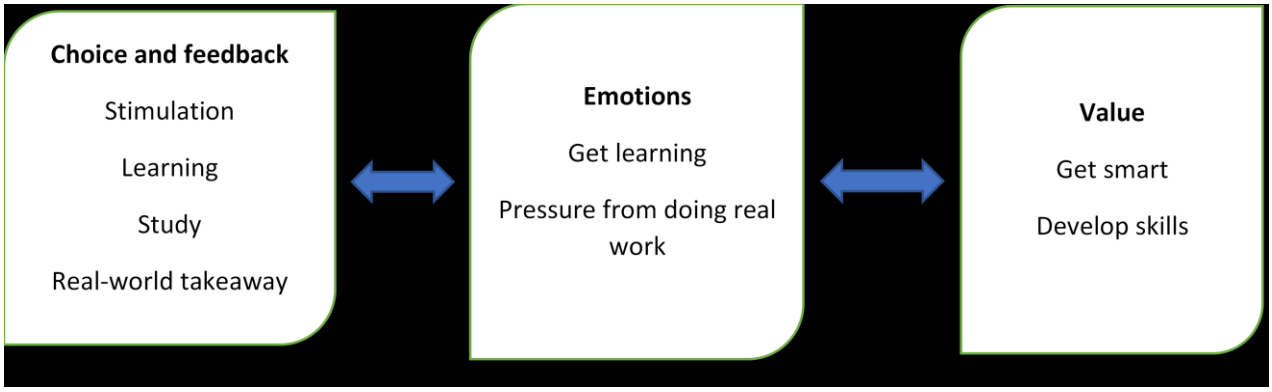
7.1.3.3. Serious fun

Serious games attempt to use digital entertainment media to facilitate education blending entertainment and education together in one game experience (Shen, Wang, & Ritterrfild, 2009). When players use the fun of games to change how they think, feel, and behave, Serious Fun comes on the stage. When played with a sense of purpose, games can change how players feel on a very deep level, add to who they are, and help them improve the world in which they live. In this case, Serious Fun adds another thing to what they love about the games they play—the transformative power of games that create value for the player's real life (Bateman, 2009).

Figure 34 Serious Fun players play with a purpose (adopted from Bateman (2009))

Players can use the fun of games to motivate otherwise boring tasks, such as training or exercise and reassure that spending time playing is not a waste of time. Players feel good about themselves and the game when there is an opportunity for a mental workout. As a result, Serious Fun mechanics create real value for players when the excitement and enhanced feedback from a game encourage practice or help players learn. Game designers can use the fun of games to change how players think, feel, and behave, or to accomplish real work, and through gameplay, players can express themselves or create value (Bateman, 2009). Figure 34 summarises how in Serious Fun players play with a purpose. Furthermore, games with Serious Fun offer more for the players to appreciate after they put down the controller (e.g. valuable personal consequences, such as improving their mood, learning something interesting, keeping them fit, or validating their moral outlook, etc.) (Bateman, 2009). Figure 35 summarises the choices and feedback associated with Serious Fun, the emotions it unlocks, and the values it may connect with.

Figure 35 Choices and feedback associated with Serious Fun, the emotions it unlocks, and the values it may connect with (adopted from Bateman (2009))



7.1.3.4. An instructional approach to achieving intrinsic motivation

A large body of research has discussed ways of soliciting intrinsic motivation for playing games, which is especially important for serious and educational games. Malone (1981) identified three primary characteristics and strategies for educational game design that fostered intrinsic motivation: challenge, fantasy, and curiosity. Malone & Lepper (1987) further expanded this taxonomy, which is based on several cognitive theories of motivation by adding the element of control to support intrinsic motivation.

Although the game design has evolved much since the era in which these studies were conducted, Malone and Lepper's (1987) studies are still relevant and informative for achieving strong educational computer games. Over the years, the principles listed below have served as guidelines for many researchers and some game designers.

• Fantasy: the game activity can increase intrinsic motivation by using fantasies as a part of the game universe. All entertainment games rely heavily on building fantasies for players to explore, and educational games should be similar instead of being abstract and distant, like earning points for finding the missing letters in a word. The narrative is a device that enables and supports the fantasy. Within contemporary games, fantasy has developed into complex narrative structures (Dickey, 2007).

• Control: the player gains the overall feeling of being the controlling party while playing. Most entertainment games foster a sense of being in control, but the degree of control can vary widely (e.g. fans of the *Grand Theft Auto* series describe the sense of control and freedom as the defining element of the series).

Curiosity: the degree to which games continue to arouse and then satisfy curiosity. This motivates players to learn, regardless of any goal-seeking or fantasy fulfilment. The optimal level of curiosity comes with an optimal level of informational complexity (Bateman, 2009; Malone, 1981).

Challenge: the game must have a series of goals personally meaningful to the player, keeping the player engaged. An optimal challenge should be neither too difficult nor too easy, leaving a player challenged but successful through the struggle and giving their self-esteem a chance to increase.

The instructional approach still influences the majority of edutainment titles out there. Thus, the design of *Chuzme* tries to incorporate at least three out of four individual motivations:

1. Both types of curiosity: sensory curiosity by the AR aesthetics of the game (look, sounds, movement), and cognitive curiosity by presenting opportunities to get to know themselves better and to better their knowledge.

2. Fantasy: *Chuzme* solicits an emotional response by letting the players experience success, fame, wealth, power, and by helping them to relate new learning their to experience.

3. Challenge: *Chuzme* provides the player with feedback on their progress towards the goal; the outcome is uncertain, thereby keeping the player engaged and motivated; the game's feedback is constructive and supports learning.

7.1.3.5. Learning theories for *Chuzme*

Constructivist and situated learning design principles are outlined as the ones that should be present in effective video games (Dede, Nelson, Ketelhut, Clarke, and Bowman, 2004).

Situated cognition provides a meaningful framework for the design of video games by situating learning in an authentic context and engaging players in a community of practice (Dondlinger, 2007). As a result, the authentic, situated context allows greater content mastery and transfer of knowledge compared to traditional classroom learning (Dickey, 2005, 2006; Klopfer & Yoon, 2005; Schrier, 2006). Lunce (2006) added that situated learning and an authentic context provide the rationale for simulation games in a classroom environment.

Constructivist theorists stress different elements, such as the player's freedom to explore the game universe and the process of constructing knowledge in a meaningful and personal way. For some constructivist thinkers, video games hold fantastic promise: they make it possible for learners to approach a subject actively and to construct their own representations. In an ideal game, constructivists argue, the learning experience of the students draws on different perspectives, gives rise to a variety of actions, and offers a fuller understanding of the given topic. For these thinkers, the main focus is the actual construction process of knowledge facilitated by the interaction with the game; as a consequence, constructivist-based research has focused on open-ended games, on students making their own simple games, and on so-called microworlds. A microworld is a simulation of a system—anything from the small universe with laws of physics to a city with basic urban planning actions—which is simplified and constructed so that a player can work with the system's concrete objects. Players must actively engage in a video game and construct their own knowledge using the artefacts of the game world. From a constructionist perspective, this is then an optimal way to learn (Rieber, 1996).

It is hoped that *Chuzme* will be a tool for constructing viable learning experiences thanks to its power to mediate the discussion, reflection, and analysis.

7.1.4. Phase 3 "Design phase" (two sub-phases, five steps).

Educating for intercultural purposes requires learning approaches and environments that develop systems thinking and problem-solving. Shen, Wang, & Ritterrfild (2009) recognised a number of super fun factors that contribute to a high level of enjoyment in games with serious content. They analysed *America's Army-Operations* (2002), *Objection* (2008), *Re-Mission* (2006), *Electrocardiogram* (2008), *Londoner* (2007), *Hate Comes Home* (2008), and *Darfur is Dying* (2006), finding that narrative-related elements such as character and dialogues (as in *Objection*), humour (also in *Objection*), and social interaction (as in *America's Army-Operations*) together with sophisticated and high-quality presentation and a gameplay structure with complexity and diversity bring a certain level of enjoyment while playing educational games.

Lane et al. (2008) add that complex collaboration games develop communication, culture, and decision making. Frederick, Corvetto, Hobbs, & Taekman (2011) found strategy games contribute to the development of planning, flexibility, and adaptability skills. Romero, Usart, & Ott (2015) added that in order to facilitate learning and skill development, games should contain authentic and enriched learning scenarios, game rules with endogenous and exogenous reinforcement, and a certain level of competition.

Thus, when designing a game with a high potential for promoting the development of complex systems thinking and facilitating a systemic understanding of intercultural issues, complexity is an element that should definitely be included. Figure 35 shows extended game sequences. Figure 36 provides an initial analysis for the identification of the activities. Table 11 describes games stages and levels with learning objectives, theories the levels are based on, and game mechanics chosen to reach the objectives.

7.1.4.1. The backstory of *Chuzme*

A simple and easy-to-understand backstory was designed to engage and immerse the learner in the game and to offer a technology-enhanced constructivist setting endowed with virtual manipulation. Providing players with a good story and choices to interact with it guarantees that they will be highly engaged. The emphasis lies on comprehension, observation, problem-solving abilities, exploration and thought. *Chuzme* invites players to explore the settings, objects and characters within the game from the first-person perspective.

Chuzme is a role-playing+action title that includes simulation elements. Role-playing: the player takes the roles of a character in a fictional setting and assumes responsibility for acting out these roles within a narrative. Action: the player must use different skills and reaction to achieve his objectives. *Chuzme* is based on a narrative, and the player passes different tests to advance and reach the conclusion of the narrative.

The plot of the story is the dramatic tension created by conflict and the stakes over a set period (Table 9).

Plot=Dramatic Tension (Conflict x Stakes/Time=Hero Jeopardy) (Dille & Zuur Platten, 2008, p. 26).

Table 9 Chuzme plot equation

Conflict	*Man vs Self.* The hero is fighting with his own demons (bias, stereotypes, ill-informed, narrow, rigid mindset)
Stakes	*What is the hero fighting for?* Triumph or Defeat. Create a diverse team and win a place in a start-up incubator in Silicon Valley, or be banned for future participation and be labelled racist and sexist.
Hero Jeopardy	*How do the conflict and stakes put the hero at risk?* Difficult choices, time pressure, strict requirements for forming a diverse team, self-limitation, lack of experience, competition.
Dramatic tension	*What is the result of the conflict?* Winning or losing a $120,000 investment and a place in Y Combinator accelerator.
Time	*Over what period does the conflict take place?* Modern times, start-up co-working environments.

In *Chuzme*, the player is a talented young entrepreneur who applied with his Big Idea to the biggest and best-known accelerator, Y Combinator from Silicon Valley, who received notification from it that his Big Idea passed the initial level of selection and now Y Combinator would like to meet the team behind the Big Idea. If the team is accepted, it will fly to the San Francisco Bay Area to spend the next three months developing their ideas and business plans. Y Combinator offers $120,000 for a seven per cent share of the company, legal assistance in constituting the company, group events like weekly Tuesday "dinners" featuring candid conversations with influential speakers such as Zuckerberg, the CEOs of Google, PayPal, etc. The climax of the start-up accelerator process is Demo Day when the team gets the chance to present the Big Idea to the 450 deep-pocketed invitation-only investors.

7.1.4.2. The game mechanics of *Chuzme*

The game starts when the player receives notification from the biggest and best-known accelerator Y Combinator from Silicon Valley that his Big Idea has been accepted for further development. The next step is to present a team that stands behind the Big Idea. Y Combinator notes that the people in the team are often more important than the idea itself, which tends to change significantly during the accelerator process. Y Combinator, backed by its international

appeal and proven track record as a successful entity in the financial arena, also notes that the most successful teams benefit economically, educationally, and ethically when they diversify (that is, when they are culturally and gender diverse). Consequently, the objective of the game is to build a culturally and gender-diverse team of four people of C-level talent (including the player) and to provide equal opportunities for immigrants, refugees and expatriates of both genders.

After the objective is explained, the player is put into a city co-working place where they need to pick the team members from a group of people, basing his choice on the candidates' profiles and assuming that they are all high-quality professionals in different stages of their lives that somehow contributed to this Big Idea.

In the first level of the game, the player has to rely on his "gut feeling" to choose 10 people (out of 32) whom he thinks might be a good fit for the Dream Team (Picture 8). The gamer is offered a free in-game hints on what is gender-balanced working environment, what is diversity and why it is all important. The choice is done under 60 second pressure. The pictures of people are randomly generated from the https://thispersondoesnotexist.com/.

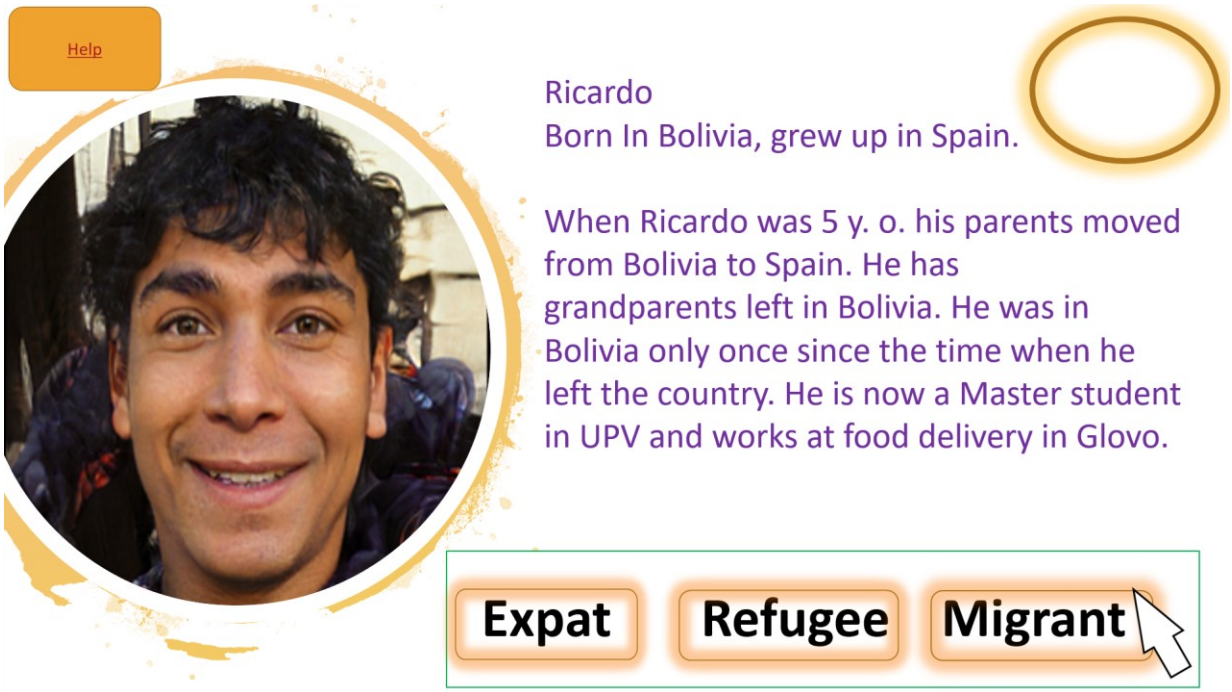
Picture 8 First level of the game ¨Gut reaction" or "Beginner's mind?"

Ideally, if the player is male: among ten chosen candidates, at least five women should be included. If the player is a female among ten chosen candidates should be at least five males. If less, in-game hints about diversity and inclusion will be offered to read. A player starts a level with 50 complimentary points. If the player makes a good gender balance during this level, he is

given +10 points for keeping gender balance and + 10 points for ethnical diversity at the end of the level. 10 points are discounted if there is no gender balance or ethnical diversity. At the end of level, he is shown a leader board of other people who passed the level before him and who make gender balanced and ethnically diverse choices in the shortest period of time. The personal score is displayed, and the level of gender and diversity in the team. The option to replay the level is offered as well.

During the second level “Expat bubble and Migrant struggle?”, 10 shortlisted candidates show the short story of their lives, and the player has two missions during this level. The first mission is: to place the candidates into refugee, migrant or expatriate selection based on their background that is offered as a written file (Picture 9). At the beginning of the level, a player is offered a free in-game hint to help to distinguish on who is refugee, migrant or expatriate before starting the selection. If he can distinguish well, he is given +10 points for each correct placement. If a player is mistaken 10 points are discounted from his score. The option to correct file placement is offered, but the correct answer will not bring 10 points. After the first mission is activated, the in-hinds could be consulted as well, but now they will cost 3 points per each link consultation. The first mission is over when all profiles are sorted correctly. To take a decision on the profile, 20 seconds are given, thus, the shortest first mission could last 200 seconds (a little more than 3 minutes). During the second mission, a player needs to choose 6 candidates out of 10 who will be invited for a personal interview keeping in mind the gender and cultural diversity, and the fact that the Dream Team should include one refugee, one immigrant and one expat at the end. Thirty seconds are given to accomplish the mission. At the end of the level, a leader board of people who make the best choice in the shortest period of time is presented. The personal score, gender balance and diversity level are displayed as well.

Picture 9 Second level of the game "Expat bubble and Migrant struggle?"



The third level mission is to ask the shortlisted candidates four questions from a list of questions provided and choose three perfect candidates to include in the Dream Team based on their answers. There are three categories of questions: general information about a person, sensitive personal questions, work experience related questions (Picture 10). The player must ask four questions from all three categories. A player can listen to the answers from all candidates or only from the ones she/he selects. There is no time pressure at this level. But a player can't replay the answers from the previous questions: one question -> answers, second question -> answer, etc. Audio files with the answers to the questions are provided (Picture 11). At the end of the level, when four questions are being asked, a player is invited to form the Dream Team. Table 10 summarises questions within each category. Questions are selected to cover a wide range of bias.

Picture 10 Second level of the game "Tell me who your friends are, and I will tell you who you are"

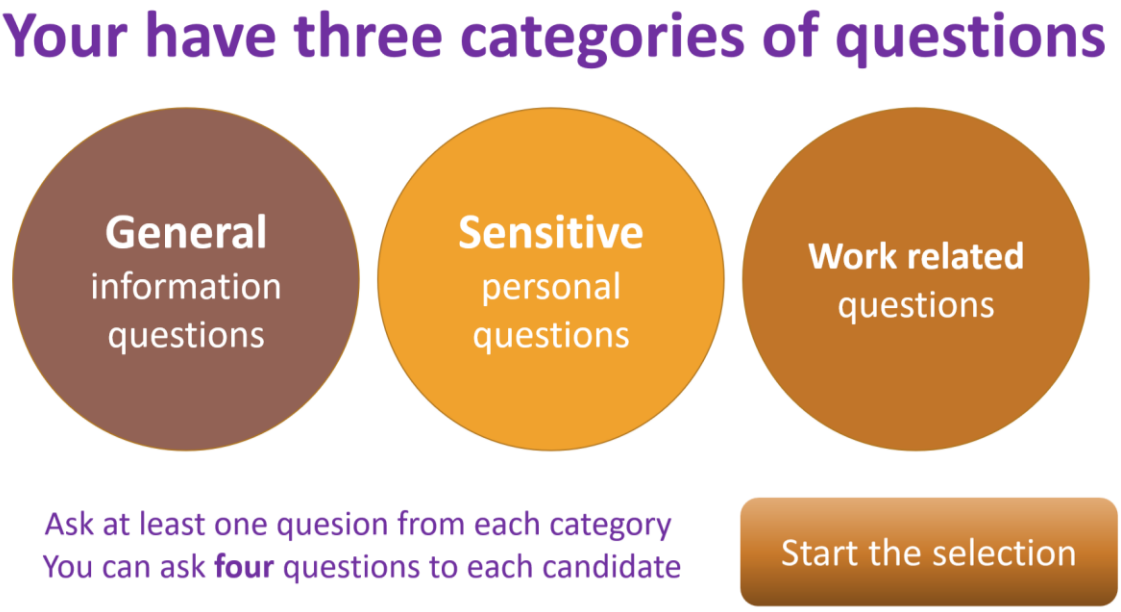
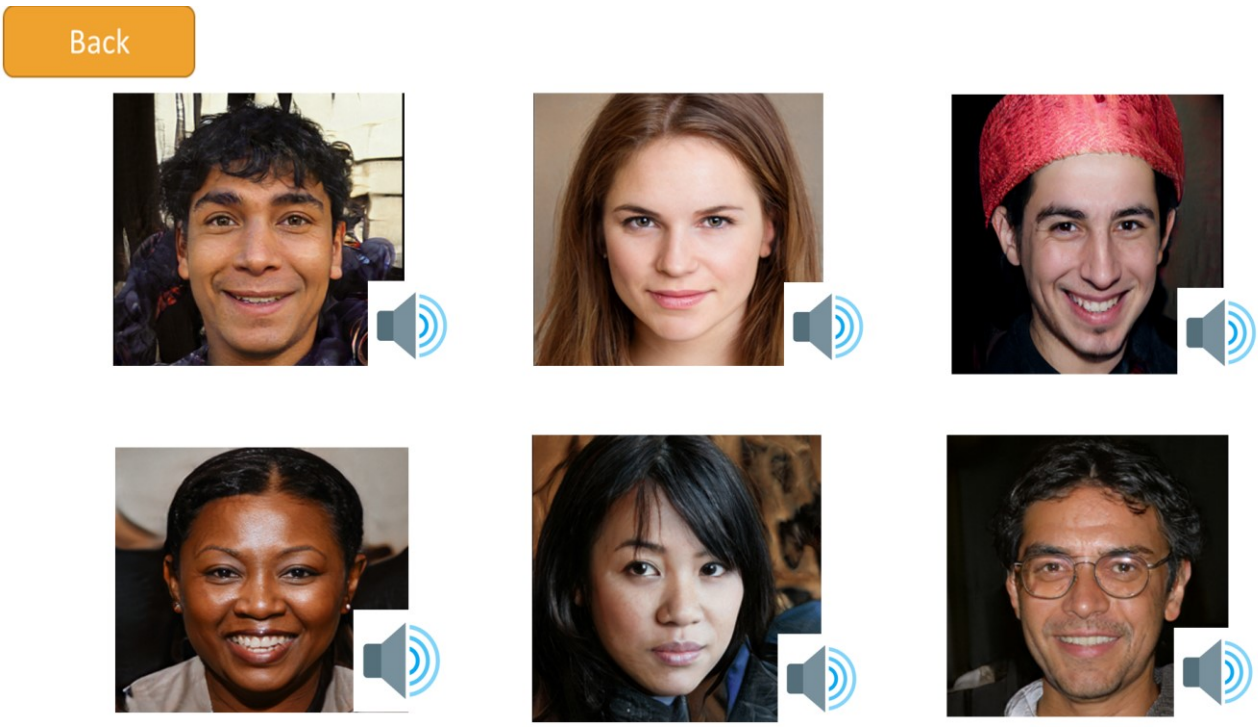


Table 10 Questions form level three "Tell me who your friends are, and I'll tell you who you are"

General information questions	**Sensitive personal questions**	**Work-related questions**
In what country have you lived the longest?	What is your sexual orientation?	What is the highest level of education you've completed?
What languages do you speak?	Do you have a criminal record?	What is your work experience?
Why did you come to Spain?	Do you live alone or with your family?	Are you a team worker, or do you prefer to work alone?
Do you smoke?	What is the level of your income?	How happy or unhappy you are to work with people who older o younger than you?
Are you a vegetarian?	Do you think people should live where they were born?	How happy or unhappy you are to work with people from a different background?

What is your religious affiliation?	Do you believe in the theory of racial supremacy?	Do you think men and women should be equally treated at work (e.g. salary, promotions, etc.)?
What is your political identity?	Would you live next to a refugee family?	Do you tend to avoid working with people who have a different way of thinking?

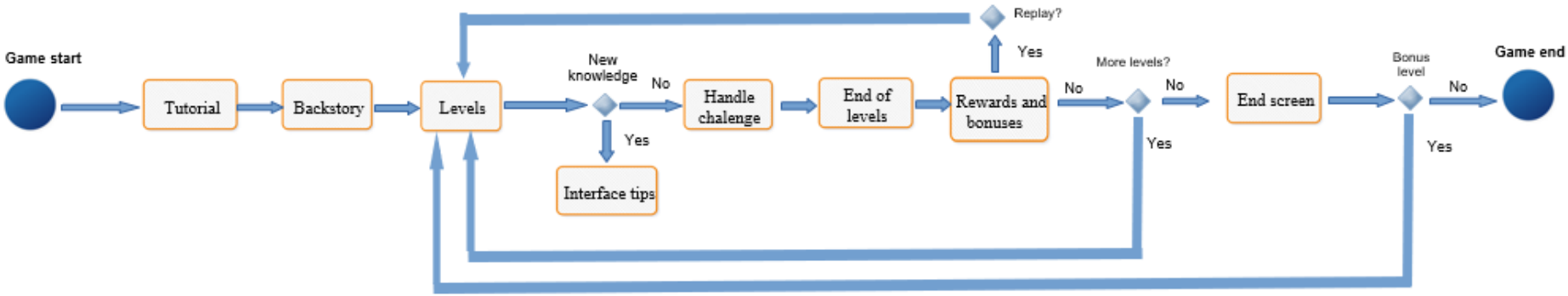
Picture 11 Third level of the game "Tell me who your friends are, and I'll tell you who you are"



The game ends (successfully) when the diverse team is formed: two female and two male, one refugee, one migrant and one expat. The player is notified that he receives four tickets to fly to the San Francisco Bay Area and the amount of $120,000 has been transferred into its account. There is also an option to play a secret bonus level before quitting the game. However, this option is added to check if a player liked the game and would like to go on with more playing.

If the player fails to form the gender- and diversity-balanced team within the limited time allotted, a player is notified that Y Combinator bars him/her from any future participation. There is a choice to restart the game.

Figure 36 Extended game sequence (sub-phase 2, step 1, intermediate/low level).



Game traces	Start, quit, end	Start.....quit.....End									
	Phase changes	Tutorial complete	Backstory complete	Level complete repeat/proceed					Levels proceed	Llevel complete repeat/proceed	Levels proceed
	Meaning variables				Interface tip access						
	Input traces										
Gaming	Actions	Watch, listen	Watch, listen	Plan, select	Obtain help, watch, read	Select, ask questions, listen to information	See performance evaluation	See performance evaluation	See overall performance evaluation		
	Tools	Tutorial	Cut scenes, story	Time pressure, NPCs	Information	Time pressure, NPCs	Rewards, levels	Rewards, levels			
	Goals	Learn UI	Get aquinted with story	Perform task with allocated time	Maximise performance	Maximise performance	Maximise performance	Maximise performance			
Learning	Actions	Observe, try	Explore, relate	Complete goal, perform action	Define, find more information	Analise, decide, relate	Complete goal	Verify, review			
	Tools	Tips, video	Cut scenes	Challenge	Definitions, tips, texts	Dramas, reports,	Conclusions	Report			
	Goals	Remember, try	Foundational knowledge	Active experimentation	Understand, awareness	Reflective observation	Perception, awareness	Understanding			
Intrinsic instruction	Actions	Demonstrate	Tell story, stress importance	Tell story	Present material	Present problem	Scaffold, review	Reward good performance			
	Tools	Tips/assistance	Challenge, simulators	Challenge	Tips/assistance	Limited set of choices, Q&A	Performances measures	Performances measures			
	Goals	Provide user guidence	Inform learner of objectives	Inform learner of objectives	Provide learning guidence	Elicit performance, confidence	Provide feedback	Provide feedback, access performance			

Unified Modelling Language (UML) activity diagram notation is used to create the sequence

Figure 37 Initial analysis to identify the activities described (sub-phase 1, step 1, high level).

Activity	Subject	Description
Gaming	The player is 14+ and is interested in intercultural, inclusive, and diversity education	The learner is playing the game to learn about unconscious biases, stereotypes, team building, diversity and inclusion
Learning	The player is 14+ and is interested in intercultural, inclusive, and diversity education	The learning objectives are to teach to be active listeners, more observant, more tolerant, more inclusive and more aware through a problem-based approach
Intrinsic instruction	The course instructor designed and produced the game	The game is created to investigate how and if virtual game-based training approach helps 1. to increase learners' engagement in intercultural, diversity and inclusion issues; 2. to identify (cultural) stereotypes and biases, 3. to practice diverse and inclusive team building
Extrinsic instruction	The game is used as a supplementary teaching resource	The game could be used in intercultural, diverse and inclusive education as a supplementary modern technology-based instrument

Table 11 Game stages and levels with player objectives (sub-phase 2, step3, intermediate/low level).

Stage/level	Objective	Theory	Learning outcome	Game mechanics
Introduction 1	To familiarise with AR-game mechanics	n/a	Set the sequences of the movements made inside AR environments	Cut scene, tutorial
Introduction 2	Backstory, rationale	n/a	Set game context and player role	Cut scene, tutorial
Level 1 "Gut reaction" or "beginner's mind": in search of mini-me	Shortlist: out of thirty-two candidates a player must choose ten that seem the most attractive candidates to be included in the Dream Team	Similarity-attraction paradigm – Homophily. We like people who are like us (attitudes, values, beliefs, physical attributes) (Byrne, 1971). There is a difference between actually having a lot in common with someone (called actual similarity) and believing that we have a lot in common (perceived similarity) (Montoya, Horton, & Kirchner, 2008) There is a difference between actually having a lot in common with someone (called actual similarity) and believing that we have a lot in common (perceived similarity) (Montoya, Horton, & Kirchner, 2008). Social identity /Self-categorisation theory. People use social characteristics such as age, race to define psychological groups and to promote a positive self-identity (Tsui, Ega, & O'reilly, 1992)	To identify present surface-level biased: visible differences (e.g., gender, age, physical disability, race/ethnicity). To define a player's preferred group that helps to promote a positive self-identity. To promote understanding that what one believes at any given time is an approximation of reality based on what is learned in the past and fits in picture of reality. To work with "perceptual blinders", "self-reference criterion", and "restrictive perceptual paradigms."	Time pressure, cut scene, behavioural momentums, competition, instant feedback, try and error

Level 2 “Expat bubble and migrant struggle?”	Mission one: sort out profiles into expatriate, migrant, refugee Mission two: out of ten profile choose six for personal interviews to be later selected for inclusion into the Dream Team	The cultural bias that naturally exists (Rexeisen (1984); Dake (1991); Douglas (1978)	To become the observer of your own thoughts. To learn to be aware of the danger of the single story. Culture becomes the foundation of the perceptual paradigm that shapes our basic way of perceiving, valuing, thinking, and acting	Time pressure, cut scene, behavioural momentums, visuals, simulate, response, levels, instant feedback, try and error, competition
Level 3 “Tell me who your friends are, and I’ll tell you who you are”	Ask four questions from three categories and make a final decision who will form the Dream Team	The cultural bias that naturally exists (Rexeisen (1984); Dake (1991); Douglas (1978). Managing diversity in modern teams (Mensi-Klarbach & Risberg, 2019)	To identify deep-level biases: non-visible differences (e.g., education, values, attitudes, sexual orientation, etc.). To work with "perceptual blinders", "self-reference criterion", and "restrictive perceptual paradigms" To value diversity, restrain from stereotypes, question your assumptions,	Time pressure, audio stimulation, response, feedback

Table 12 Traces for further in-game analysis. Phase 2, Step 4 of the game design phase (intermediate/low level)

Data point	Trace description
Game start	Number of times the game was started by the player and in general
Game quit	Number of times the game was quit by the player and in general
Game end	Number of times the game was ended by the player and in general
Tutorial completion	Number of times the tutorial was watched by the player and in general
Backstory completion	Number of times the backstory was watched by the player and in general
In-game hints activated	Number of tips accessed by the player and in general
Level completion	Number of levels completed by the player and in general
Time per level	Time needed for individual-level completion by the player and in general. Dynamic clock
Score per level	The level score achieved by the player and in general. Shown at the end of the level
Global time	Total time taken to complete the game by the player and in general
Global score	Total score achieved by the player and in general
NPCs	Number and type of NPCs chosen per level and in general
Questions	Number and type of questions chosen per level and in general

Table 13 Chuzme extended analysis (sub-phase 2, step 3, intermediate/low level).

Gaming	Implementation	Learning	Description
Time pressure	Time constraints on every level	Action/task	Challenge the player to complete the level before the time runs out which leads to the sense of accomplishment and progress
Cut scene	Video cut scene introduces outcomes through the storytelling	Instruction, tutorial	Provide progress through game scenario and interaction with NPCs
Backstory	Introduce the game objectives	Instruction, tutorial	Set game scenario
Behavioural momentums	Gameplay to cause a shift in user behaviour	Experimentation	Reinforce behavioural change
Levels, feedback	Level of understanding the task. Level up. Feedback. Time taken	Motivation, feedback, reflect	Sense of achievement
Competition/rewards	Powers up. Information. Points. Awareness	Competition, motivation, involvement	Gives a new power. Gives player rating, scores
Tutorial	Guide user through game mechanics	Guidance	Guide player on the initial level, provide information necessary for progress
Movement/motion	First-perspective approach	Action, task	Behavioural progress, the feeling of presence and “being”

7.1.4.3. The Interaction Design

During phases 1 and 2, detailed research was conducted whose results were used to construct the game with realistic characters and storyline that could be appealing to the intended audience. *Chuzme* uses storyline, characters, gameplay, and behavioural procedures as mechanisms to influence mediating variables. The game includes situations in which players could find themselves, problems they could encounter, and their solution. The emotions that a player draws from the personal experience of playing are a sense of achievement (mastery of in-game skills), a sense of empowerment (performing acts that cannot be performed in real life), and a sense of experimentation (taking a certain role) (Salmond, 2016) (Table 13). The fact that the game is educational means it needs to be adapted to everybody, including those who define themselves as non-gamers, which in turn means developing easily accessible and simple-to–control game. Ideally, gameplay should not exceed 5–20 minutes (Baaden et al., 2018).

7.1.4.4. The Gameplay

Every effort was made to let players gather information through clear visual and auditory media that provides information. For example, players learn about people in front of them by listening to their story, rather than by reading (audio file), even though the game provides some material in the form of text and photographs. **Appendix 4 includes the link to the video demonstration of the game mechanics of *Chuzme.***

7.1.4.5. In-game hints for student guidance (sub-phase 2, step 3)

Chuzme allows players to make progress regardless of their previous knowledge level or background thanks to its in-game hint system. Some commercial games such as *Monkey Island*™ saga use a similar solution. *Chuzme* includes hints that are delivered when requested and at a cost to the player established by the designer. Some hints such as those that help users deal with the interface are provided at no cost. These hints guide players who need it but do not disturb those who can do without. Providing these breadcrumbs to players broadens the audience by including those that might otherwise have found the game confusing.

7.1.4.6. Measure the transference of knowledge and assessment design (sub-phase 2, step 4)

Student assessment in educational games designed as an explicit representation possesses great potential for tracking and assessing students' learning outcomes if to make comparison with less interactive educational media. Educators highlight and score relevant actions, generate feedback and identify and rectify inaccurate assumptions, which is essential in educational games during the de-briefing stage after the game is played (Garris, Ahlers, & Driskell, 2002). These are the main reasons to include in-game student assessment modality in the game design.

The nature of the subject matter and the basic design of the game gives all that is needed for in-game assessments, although a determination of whether or not the player has met the performance objectives will happen outside the game. Measuring what players are learning is straightforward and is accomplished in two ways (one possible methodology): 1) in-game survey at the beginning of the game (questionnaire about player's background, later to be used to evaluate personal bias and cultural stereotypes) and 2) through group or individual interviews after the gameplay experience. However, an instructor is free to choose the methodology of introducing this game in class, pre and post knowledge assessment.

Moreover, data is collected from in-game traces (Table 12) to see if the game is having an impact on the attitudes of the players. The feedback generated from the in-games traces is expected to enhance learner's awareness of their own bias and stereotypes, to improve the alignment between their expressed behaviour and intended behaviour. Participants' in-game traces can be rated, annotated and evaluated by educators and contrasted with participants' own opinions during group or individual interviews.

As a result, the holistic approach to research and design, and a mix of different methods for data collection and analysis lead to the valuable measuring of the knowledge transfer to the player. This is crucial for educational games; however, to date, few games have attempted to do so.

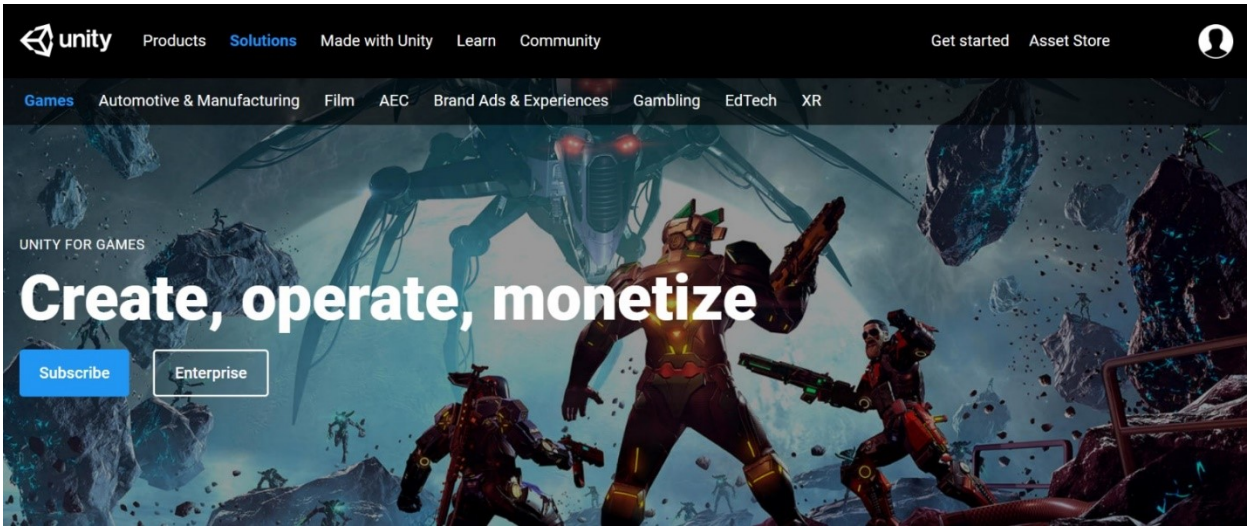
It's worth noting that *Chuzme* is not supposed to be a standalone title but to be integrated as one more tool in intercultural education. As I was mentioned before, the role of the teacher is very important with respect to if and how this game becomes a learning process. In other words, the teacher is to provide elements of analysis and reflection that allow learning to happen using the contents of the game.

7.1.4.7. Implementation Details (sub-phase 2, step 5)

When designing a video game, the right platform and format choice is the key. In the case of *Chuzme*, both the target audience and the objective are taken into account to choose the ideal platform for this title. Using casual gaming approach broadens the pool of potential players.

Concerning the technical aspect, *Chuzme* could be implemented into Unity 3D (Picture 12), a cross-platform game engine that offers advanced lighting and rendering options, pipeline optimisation, physics management, built-in support for spatialised audio, multitasking, complex animations and networking. Interaction implements a client-server architecture in which the server handles the simulation state and controls the projected screen, and the clients are the players' devices. Finally, an AR Foundation Package could be used as a software library that can be integrated into

Picture 12 Screenshot from Unity entry page



Unity, thus supporting the game deployment on different mobile platforms (iOS, and Android). For accelerating the development of the app in Unity for the HoloLens AR glasses, Microsoft Mixed Reality Toolkit will be used.

Chuzme intends to make use of visual and sound channels. Otherwise, the player quickly becomes overloaded with one modality usage and will be lost. Sound effects and music drive interest or increase scenario effects (Baaden et al., 2018). Interesting modality to develop for AR solution is touch (e.g. manipulation by hand with augmented reality applications). The new HoloLens 2 has been announced this year as an evolution of the previous model with tracking of both hands and fingers to allow the direct manipulations of AR figures with bare hands.

7.1.4.8. Validation

The first informal evaluation of the concept and game mechanics presented as a recorded video clip (Appendix 4) happened during Sietar Congress 2019, held in Leuven, Belgium, from 30th of May till 1st of June (Sietar is a Society for Intercultural Education, Training and Research). Ten leading experts from intercultural, diversity and inclusion fields were asked to see the video clip and to share their viewpoints on the concept, dynamics and mechanics of the game, possible inconsistencies and disharmony of the flow of the game. At the end of a watching session, the recorded video was discussed, rated, and evaluated by expert observers. To summarize user feedback and reactions, it is worth noting that 10 out of 10 experts highlighted: 1) strong concept of *Chuzme*; 2) the capability of *Chuzme* to engage the user in meaningful learning; 3) saw the game as a possible tool to practice diversity and inclusive teambuilding; 4) described a concept of the design of a game as thought-provoking. 9 out of 10 experts pointed to the potential of the game to facilitate a critical reflection on the bias and stereotypes. The experts unanimously stated as possible application domains of *Chuzme* in intercultural, diversity, inclusive, migrant, human rights education.

7.2. Summary of Chapter Seven

In this chapter, I presented the design and (initial) development of *Chuzme*, a first-person perspective digital game aimed at supporting intercultural learning. The creation of a digital game is a complex and multifaceted process. The game's design is based on a sound theoretical model, which helped to identify the main elements for improving the educational outcomes expected of the game. *Chuzme* brings a rich, well-developed approach to the design concepts behind virtual worlds. Player immersion is fostered by allowing them to interact with a virtual scenario in (ideally) augmented reality (AR). It proposes an overarching framework comprising conceptual and technical frameworks for enhancing intercultural skills.

As future work, I am planning to begin a game-prototyping process with crude interface sketches and playable prototypes, and completing the implementation of *Chuzme*, introducing some improvements as well to the current design. Further work is also needed to empirically demonstrate the significant advantages of using video game in intercultural education. I plan to exploit quantitative and qualitative approaches to perform a thorough evaluation of the game. Further evaluation will also serve for evaluating the efficacy of the chosen reference framework in guiding the design of intercultural educational games. Developing an educational game is a challenging endeavour due to its having to satisfy experts and novices alike while addressing, visualisation trade-offs, and the integration of gameplay and learning content (Kelly et al., 2007). Moreover, efforts should also be made to enhance the accessibility and to maximise the outreach of the benefits of gaming for intercultural communication of intercultural games (e.g. addressing language, geopolitical barriers, access to technology issues). Thus, the game will be available in several languages and have cultural adjustment depending on the region of the world.

Chapter Eight: General discussion

Simulations don't reflect reality; they reflect a designer's conception of reality.

Sivasailam Thiagarajan

Sooner or later, digital games will change the landscape of education as we know it. Thus, good educators, educational policymakers, leaders and influencers fight for new technologies and new practices to prepare students to the post-industrial, technology-rich, real-world (Shaffer, Squire, Halverson, & Gee, 2005).

This thesis set out to explore the influence of digital games on cultural literacy acquisition. In the theoretical part, I focused on recent publications, reported results applicable to the intercultural field, the diversity of the outcomes covered, and the different types of video games studied. In the experimental part, I holistically investigated how every day playing experiences of virtual-world users add to the formation and enhancement of cultural-literacy skills. These final words summarise the thesis' main findings to answer the research questions, outline their empirical, theoretical and methodological contributions to the field of intercultural communication, and consider some areas where these can be put to fruitful use. This chapter concludes by addressing the limitations of this study and the suggestions for future research.

8.1. Conclusion

This thesis aimed to strike an interdisciplinary balance between intercultural new media studies, cultural studies and games studies. The recent rise of virtual and mixed reality has given rise to many questions about the potential of immersive video game technology to influence how people think and feel about reality, and especially to foster twenty-first-century skills.

Four main objectives of this dissertation were:

1. To clarify some of the conceptual ideas surrounding cultural literacy and present the updated elements of cultural literacy model relevant to the 2020s;

2. To investigate what evidence exists that video games help digital natives to acquire cultural literacy and intercultural skills, decrease stereotypical thinking, foster empathy towards culturally "other", and make them more culturally sensitive;

3. To gain insights into the gaming preferences and learning outcomes of digital natives to allow the design of more appealing serious and educational games that deals with current global and social issues that would help to create a positive social change in the long run;

4. To offer a conceptual design of a serious educational game that could serve as a supplementary digital game-based learning tool in intercultural, diversity and inclusive education.

To thoroughly investigate the research questions and reach set objectives, Chapters Two, Three, Four, Five, Six and Seven required techniques, tools, concepts and theories from more than one discipline s that were beyond the scope of one discipline. An interdisciplinary approach is necessary for exploring the most critical and urgent challenges facing the world today. Video games impact and learning outcomes are certainly one of them. The interdisciplinary approach initially criticised for the lack of a coherent and defensible sense of purpose (Benson, 1982), now is seen as a response to the perceived limitations of a one-disciplinarily approach that brings innovation, creativity, reflexivity and engagement with real-world problems (see Razmak & Bé Langer, 2016, for discussion). This thesis deals with complex and real-life research questions, and through a number of different methods and approaches, I showed how cultural literacy is produced, negotiated and enacted in video game environments.

The thesis starts with an introduction to the topic of interest and addresses the first objective. Chapter Two presents an introduction to the common trends for a new set of skills and competencies necessary for success in the twenty-first century, as studied by policy-making institutions like UNESCO, education institutions like the British Council, MNCs like IBM and Google, and influencer organisations like LinkedIn and the World

Economic Forum. Globalisation has brought about change not only in the economic, social and technological order but also in people's mentality and the ways they interact with the world around them. There has been a consensus that in our increasingly interconnected world, one of the essential tasks of educators and institutions at all levels is to develop, promote and enhance cultural literacy. This chapter reviewed the literature on cultural literacy and clarified some of the conceptual ideas surrounding the construct. It updated the elements of cultural literacy relevant to the 2020s and critically assessed the development of the concept of cultural literacy in the twentieth and twenty-first centuries. The conclusion drawn is that there is a pressing need for an updated model of cultural literacy that can serve as a powerful instrument for living in a VUCA (volatility, uncertainty, complexity and ambiguity) world.

It is worth noting that while cultural literacy is a broad concept, a review of the literature and the need to meet the unique demands of global interconnectedness in a culturally mindful way led to an update of the cultural-literacy model with the inclusion of the following skills and competencies, which served as a point of reference through the thesis' subsequent chapters:

1. cultural mindfulness (cultural self-awareness + local cultural awareness + intercultural sensitivity + empathy),
2. critical thinking,
3. curiosity,
4. being a Change Agent Leader (Influencer) (includes patience).

Chapter Three follows with a brief history of video game research in order to provide evidence of the influence of video games on players and society as well as to examine the emergence of this field of research and its main challenges and current trends. Although video games were initially demonised, in the late nineties some researchers suggested they might be helpful tools for developing certain useful skills and might even become a new method of learning. The research conducted on video games over the past decade has greatly advanced our understanding of their effects on users. A shift has taken place in the general and scientific perception of video games. The question is no longer whether they are good or bad, but whether they are useful or not in

supporting modern education that deals with the twenty-first century's challenges. Knowledge of the history of video game research served as a foundation for the mindful and competent control of the impact that video games have on players in particular and on society in general. This is the first thing that needs to be better understood: their effect on personality and behaviour, and not just in the areas of aggression and hostility. While the popular press has long simplified the effects of video games, this chapter proves that these effects are more complex than originally thought and depend on a variety of characteristics.

Chapter Four is largely a discussion of the results of an in-depth study of the state of the art of the recent literature regarding the impact and outcomes of video games from the points of view of intercultural literacy, diversity, and inclusion. Despite the massive popularity of video games, their increasing variety, and the diversification of the player base, until very recently little attention was devoted to understanding how playing video games affect the way people think and collaborate across cultures. Sixty-two studies are identified whose aim is to analyse behavioural change, content understanding, knowledge acquisition, and perceptional outcomes. In this systematic literature review, I have included a mix of empirical evidence, case studies, and content-analysis research to answer the research question. The findings of the review suggest that video games have the potential to reinforce or weaken stereotypes; help to acquire cultural knowledge and develop intercultural literacy, socio-cultural literacy, cultural awareness, self-awareness, and the cultural understanding of different geopolitical spaces; and to some extent also facilitate the development of intercultural skills. However, even though today's video games cater to an ever-wider player audience, some of them still underrepresent and stereotype minority groups, promote whiteness and Eurocentrism, and foster racism.

Chapter Five explores the nature and dynamics of the relations between video games and serious social issues. The popularity of video games in mainstream culture has led to increased interest in the use of video games for tackling serious and sensitive social issues. Immigration is a major contributor to the cultural and ethnical diversity of modern society. Mixed methods (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2010) were used to explore this issue in some detail. The participants in quantitative

Study 1 (N = 98) played the games *Survival*, *Papers, Please* and *Against All Odds*. Qualitative study 2 (N = 78) employed the narrative research method (Riessman, 2008) to examine experiential, participatory learning, with participants playing the video game *Against All Odds.*

The games used in this study were designed to increase ethical awareness of the issues involved, arouse emotions, make people see things from the point of view of migrants, change people's perceptions, and encourage them to take action in real life. The two studies obtained heartening results for producers of empathy video games. *Survival*, *Papers, Please* and *Against All Odds* all highlight the potential of video games for educating people about global issues and evoking empathy without trivialising problems. Participants reported an entertaining gaming experience, and many of them ended up both feeling more empathy and less rejection towards migrants and refugees and being more motivated to actively help people in need. Thus, Chapters Four and Five yielded interesting findings to answer the second research question. There are clear indications that this immersive technology is able to convey complex emotional experiences, decrease stereotypical thinking, foster empathy towards culturally "other", and make people more culturally sensitive quite effectively.

In Chapter Six, I employed the video game survey research method in order to gain relevant insights into the gaming preferences of Generation Z players and to describe what they find appealing in AAA entertainment games. This chapter investigated the video game preferences of Gen Zers through a survey of a wide sample of Spanish and Ukrainian gamers and casual players (N = 427) that was designed to reach objective three. In particular, this study revealed the video game genres, characters, and in-game elements and features that Gen Zers find attractive—both in general and by sex—and those they miss and are looking for in future games. Understanding the preferences of Gen Z players allows game designers and especially designers of educational and serious games dealing with current global and social issues to make inferences about the game features Gen Zers prefer over others and to better personalise gameplay. The findings also confirmed that games do not only produce fun but also a great deal of learning. The English language, the basics of informatics, strategic thinking,

geography and history, teamwork, cultural knowledge, perspective change, and creativity are all learnt and reinforced during video game play.

Chapter Seven is a direct result of the previous chapters of this thesis, revealing that there is a demand for tools facilitating intercultural education. Video games are one of the most advanced new media technologies, so it is only natural to suppose that some of them, such as serious and entertaining games and simulations, can offer remarkable possibilities for fostering learning in the area of intercultural education. The evidence presented in Chapters Four, Five and Six suggests that these possibilities have not yet been fully explored. This chapter, consequently, addresses objective four of how serious games (SG) (e,g. for augmented reality (AR)) can foster and support active learning of twenty-first-century skills, namely communication, collaboration, social skills, and intercultural skills. It explores theoretical guidelines in the design of *Chuzme*, an educational augmented-reality game that focuses on raising cultural self-awareness and the acknowledgement of cultural bias with the objective of generating positive attitudes towards migrants, refugees and expatriates amongst its players. This chapter details the decisions taken in the *Chuzme* design process, highlighting their relationship with the methodology chosen. It is hoped that this will serve as a useful reference for the development of similar titles in the future.

Overall, this thesis has provided a rich and detailed insight into the ways video games add to cultural-literacy acquisition. By using video games for experiments and gaining positive results in developing cultural mindfulness (cultural self-awareness + local cultural awareness + intercultural sensitivity + empathy), enhancing critical thinking, eliciting curiosity, and stimulating gamers to be Change Agent Leaders (Influencers), this thesis adds to the body of research that moves beyond popular sentiments that ‘it’s just a game’ to support video games as a new and effective tool that might be adapted to support intercultural education. The results also prove that empathy video games can be used to address serious social issues such as migratory movements and the refugee crisis by creating a simplified but still dynamic scale model of reality. They are an effective way of making people live and feel remote situations and negotiate cultural and political spaces as actively engaged citizens. The multi-perspectival

approach has made it possible to show educators from the intercultural, diversity and inclusion fields different angles for applying video games in their practice.

Profound changes in the global political and economic order generate massive displacements of people in almost every region of the world. People are connected to global culture and global networks of communication and will continue to migrate to improve their quality of life. These movements cannot be controlled at the source; what matters is how host countries and their citizens respond. This study, therefore, expands on previous studies by contributing to a better understanding of the possibilities of video games for intercultural, diversity, citizenship, human rights and inclusive education. Furthermore, the category of players this thesis focuses on is the digitally born generation, also known as Generation Z or the Net Generation. This generation is the first group of people ever to grow up with the Internet, and it is tech-savvy and technology-dependent. Studies aiming to understand the different attributes of Gen Zers have flourished during recent years. One of this generation's characteristics is an eagerness to learn and to make an impact on society, and this was confirmed by the results of the experiments presented in this thesis.

Four objectives set for the present interdisciplinary study were achieved. Interdisciplinarity in intercultural new media studies, cultural studies and games studies brings new ideas, better solutions and advanced models of innovation. However, in spite of the evidence previously presented, more research is still needed to confirm the potential of video games to positively contribute to these fields. There is no doubt that research should continue to focus on the effects of video games as dynamic and interactive learning tools. To this end, the thesis calls for scholars to attend these complexities by conducting holistic research into how cultural literacy is produced and enhanced by video game environments.

8.2. Contributions to Knowledge

This thesis fits with the global trend of studying the impact of video games on gamers on a wide range of topics. It has made a series of conceptual and empirical

contributions to the knowledge about this subject and has resulted in the development of a serious educational video game that can be used to support the active learning of twenty-first-century skills, namely communication, collaboration, social skills, and intercultural skills. This dissertation, therefore, has implications for video game researchers, video game development practitioners, and intercultural, diversity and inclusive educators willing to introduce video games into their classes. I will now outline a number of contributions this thesis offers to the field of video game studies, intercultural studies, and video game development.

8.2.1. Video game research

The research field of computer games is still under establishment, although there is much progress in the last several years. The brief history of video game research (Chapter Three) showed that over the last few decades, video games have not only been a source of entertainment for children and adults but also the object of much academic interest, sparking a flourishing scholarly debate and a growing amount of multidisciplinary research. Research has been distributed over a number of disciplines with little in common except the interest in digital games: sociology, media studies, psychology, anthropology, instructional technology, ethnography, history, business studies, military tactics, literary theory, educational, and computer games studies. This research has greatly helped to understand the effects of video games on users. Much has been written on violence, sex and gore-laden themes in video games, but despite the early focus on demonising video games, in the 1990s some researchers suggested that video games might actually be helpful in developing some useful skills and might thus become a new method of learning.

Researchers realised that a more balanced perspective was needed, one that considered not only the possible negative effects but also the benefits of playing video games, especially considering that in the last decade video games have changed dramatically, becoming more complex, realistic and social in nature. More and more video games started to act as *"simulated environments",* encouraging players to solve various *"real"* in-game problems in creative ways, requiring non-linear parallel

processing, combining telling and doing, and encouraging bottom-up experimentation. Slowly interest shifted from the early "Do games induce violent behaviours?" studies to "Do games affect players?" to "How do games affect players?" The last question was extended to the research questions of this thesis "Can video games teach digital natives intercultural skills necessary for a successful operation in the twenty-first century?", "Can video games be a useful and practical addition to the curriculum of intercultural education, adding to positive social change in the long run?"

Consequently, interest is growing in the potential of mainstream games and serious games for formal and informal education. The primary claim of this line of research is that video games may have beneficial educational impacts and add to "twenty-first-century skills". Chapters Four, Five and Six proved that entertaining commercial titles, serious and educational games, and simulations *(Survival; Papers, Please; Against all Odds)* support players in learning and in acquiring skills that enhance cultural literacy, which is considered to be a twenty-first-century skill.

This thesis also provides insights on how empathy games work to change attitudes and adds to the growing evidence on the effectiveness of video games in tackling social issues (Chapter Four). Both studies—quantitative and qualitative—reported positive attitude change: the 'Denial' attitude decreased, and 'Empathy' increased, demonstrating that:

a) this effect may be measurable;

b) inhabiting another person's perspective helps foster empathy and willingness to take action (e.g. volunteer to help);

c) video games foster curiosity about the issue at hand;

d) players who enjoy the game more are influenced to a greater degree.

Thus, video games can serve as stages for the discourse on cultural, social and political practices and systems that enhance conceptual and critical thinking on a wide variety of issues. Empathy is a key component of effective cultural communication (Zhu, 2011). This confirms what game designer Ryan Green says about people using the

pronoun ‘I’ when talking about video games and how this provides a platform for creating immersion and engagement, a new level of empathy. This also confirms that empathy is a skill—mentally putting oneself in a given situation—and, as such, it can be trained, e.g. with empathy games that encourage players to create new contexts depending on the game’s storyline.

Unexpected findings (Chapter Six) confirmed the idea that video games promote a fascination with technology and do not only provide a fun but also skills that are useful for and applicable in real life. Ninety-five per cent of the respondents in the study are convinced that video games are educational, with five per cent of respondents stating that their career choice was the result of playing video games. Players themselves reported having acquired the whole set of “soft skills” (leadership, team building, communication, etc.). Other skills reportedly acquired are reading, writing, mathematics, the English language, the basics of informatics, strategic thinking, geography and history, teamwork, physics, chemistry, music, first aid, and perspective change. The development of mental abilities is the second most mentioned influence of video games on Gen Z players.

As can be seen, the acquisition of various skills and knowledge is a promising side effect of game playing that originally meant to be pure fun.

The thought-provoking discovery worth mentioning here is while I was doing literature reviews (Chapter Three and Four), I noticed that the majority of studies on the video games are done by male researches, with a very few exceptions such as Elizabeth Behm-Morawitz, Mia Consalvo, Anna Everett, Isabella Granic. As it was mentioned in Chapter One digital game environment nowadays are far from being a rarity in a male-dominated realm, female players make up half of the gaming audience. Chapter Three highlighted that strong independent women remain underrepresented in digital games, however, more and more game production companies brand themselves on social responsibility and promote games with strong, intelligent and decisive women. Employing more females in the game development industry is a pervasive trend in the tech industry nowadays. Video game studies is still largely male-dominated, though.

8.2.2. Video game development

The findings outlined in Chapter Six expand our understanding of digital natives' view of video games, their video game preferences and their expectations of excellent video games they would be willing to play in the future. Game developers of serious educational games often struggle with less resources available compared to AAA entertainment games producers. Yet, this study has identified several recommendations that game developers could take into account when designing new games, especially the ones dealing with serious topics and important social issues.

To begin with, for digital natives, video games are an interactive art form of the twenty-first century that gives them entertainment, fun, emotional satisfaction, and an escape from reality. Action, role-playing and strategy are males' favourite video game genres, and simulation, puzzles and adventure are the ones preferred by females. Females are also more open to trying out a very varied range of game genres. Gameplay; graphics, art and animation; and good storytelling appeal to both sexes. Gen Zers will welcome with open arms games that have great captivating stories (non-linear ones), that make one laugh, cry, sympathise, and hate, and that have grand endings. Gen Z gamers crave for real possibilities to change game flow by making choices and taking (difficult) decisions, i.e. open worlds. Considering that Gen Zers are sometimes labelled the "iGeneration", they expect maximum customisation and personalisation of the characters and levels, a personalised game experience. Gen Zers are looking for meaningful games, games that teach, that are inclusive and offer a diversity of characters and inter-character relationships. They are aware of the sexism and racism present in games and ask for the protagonists to be diverse in gender, race, roles, sex orientation, etc. They complain about the poor representation of women and minority groups, and the lack of good roles for both; Gen Zers are eager to see strong, independent female characters that participate actively in the stories. Video game producers should shift from producing overwhelmingly male-orientated games to genres that also cater to the female market, such as simulations, which is one of the top genres preferred by female gamers, who say that practising and learning new skills is one of the main attractions video games hold for them.

In sum, players are looking for captivating stories that get them to empathise and spend hours playing, and that offer non-linear plots with difficult moral choices and the possibility to influence game flow. Video games should elicit satisfaction, relaxation, anger, empathy, sympathy, and immersion. Games designed with these characteristics would, therefore, stand a greatly increased chance of being chosen by players. Having cross-platform features would also significantly help games reach wider audiences. Another factor to consider is the augmented reality (AR) games. These have not been commercially successful, with the exception of Pokémon Go, but Gen Zers would still definitely like to see more good games of this type in the near future. Two reasons might explain this, firstly, there is an increasing supply on the market of the new compatible AR mobile phones. Secondly, the price of AR glasses steadily declines.

Also, paradoxically, parents are the ones introducing their children to the world of video games, so especially for educational and serious games developers to gain greater visibility, the first step might be to work with parents.

The logically consistent, well-designed conceptual model called Activity Theory-based Model of Serious Games (ATMSG) was used as a theoretical guideline in the designing of *Chuzme* (Chapter Seven), an educational (AR) game that focuses on raising cultural self-awareness and the acknowledgement of cultural bias with the aims of generating positive attitudes towards migrants, refugees and expatriates amongst its players. A description of various mechanisms--such as storyline, characters, gameplay, and behavioural procedures--was provided to help understand the mediating variables this video game is meant to influence and to show how these elements are interconnected and how they contribute to achieving the desired learning outcomes. Prior to constructing the video game, we conducted formative work to make sure that the game's characters, the storyline (including the situations characters find themselves in), problems, and solutions are realistic and appealing to the intended audience. Behavioural-change components that are embedded in the gameplay and help advance the storyline, such as goal setting and goal review, were tested with professionals of the field. *Chuzme* enables the player to make choices for their character and to observe the short- and longer-term consequences of their choices for themselves and others. Connecting goals to personal values, providing

choice and performance-related feedback and structuring the game in levels that are gradually challenging all aim to enhance the intrinsic motivation of the player and help to see the big picture. The use of in-game measurements and analytics allows the instructor to monitor the learner's retention (e.g. levels completed, questions chosen) and to check whether the intended learning outcomes are achieved. The game design will surely evolve after further testing, and the impact of those changes will naturally be evaluated, including by the means of in-game analytics. It is hoped that this guideline will serve as a helpful reference to guide the design and development of similar titles in the future. But of course, there is not a *"one-game-fits-all"* approach that will assist equally students with gaining requisite skills. Clearly, it is important to continually seek methods, strategies and exemplars conducive to designing optimal digital game-based learning environments (Dickey, 2005).

8.2.3. Intercultural, diversity and inclusive education

In a world facing rapid population growth, migratory processes, and globalisation, there is an increasing interest in supporting intercultural education. Culture is increasingly systemic, modular, customizable, and participatory (Zimmerman & Chaplin, 2013). There is an unprecedented and pressing need for people to be able to deal with the complex dynamics of the world in which we live, to constantly assess our surroundings, and to adapt to and operate in them by continuously reviewing our frames of reference (Fabricatore & Lopez, 2012).

Thus, intercultural education requires the assimilation of domain-specific knowledge and the development of mindsets that enable people to engage in complex system dynamics, in other words, "playful, innovative, trans-disciplinary thinking in which systems can be analysed, redesigned, and transformed into something new" (Zimmerman & Chaplin, 2013). We have entered the *"era of games"*, so intrinsically motivated game-based learning processes could address this need. Moreover, intercultural skills are a lifelong issue for all members of our society. Games can make the learning process more enjoyable for lifelong learners.

An overwhelming majority of the participants stated that they gained a range of knowledge and acquired practical and useful skills while playing their favourite video games, confirming that video games can be educational (Chapter Six). The fact that gamers themselves report educational outcomes is promising for educators looking for new innovative tools to implement into their teaching practices. A year-long study that surveyed over 500 teachers saw the great majority confirming that integrating video games into the educational process significantly increased students' motivation (Joyce, Gerhard, & Debry, 2009). This information should draw the attention of the non-formal-education sector because all over the world, millions of gamers of different ages and gender play video games for billions of hours every week.

Today's increased connectivity across countries, cultures and individuals requires people to work hard at developing and fine-tuning their twenty-first-century skills, including cultural literacy if they want to be successful in facing and dealing with the economic and political challenges of this century. The capabilities and competencies needed for success in the twenty-first century suggested by UNESCO, the British Council, IBM, Google, LinkedIn, and the World Economic Forum led to the presentation of a new, updated model of cultural literacy (Chapter Two). Contemporary cries for an end to classical positivism and cultural essentialism in dimensional thinking are also a call for the "fluid literacy" where we are forced to realise that cultural literacy enables us not just to analyse and understand cultures, but to be aware of the context. The updated model of cultural literacy seeks to re-examine what educators previously considered to be cultural content related to groups of individuals and to integrate this with what we are learning about how the whole human system works. Defining the role of change agent leader (influencer) as one of the core elements of the updated cultural-literacy model suggests that cultural literacy is really an active practice: it is incomplete without the skills to achieve goals in the real world.

Eighty per cent of digital-game-using teachers wish it were easier to find curriculum-aligned games, and only 39% are even aware that a sufficient variety of such games even exists (Takeuchi & Vaala, 2014). An overview was provided of the well-documented research supporting the positive impact on the cultural-literacy acquisition of

video games that included entertainment AAA titles, serious games, and serious games using IVET (Chapter Four). The review included forty papers reporting on the positive or negative impact of games on intercultural literacy and skills development and on (pro-social) behavioural change, the objective being to determine how much evidence exists and to present it from different angles to educators from the intercultural, diversity and inclusion field. Findings that video games are capable of challenging player´s existing mindsets and their attitudes towards the culturally other (Chapter Five) invite researchers and educators to take a closer look at video games and find new applications for them as possible tools in their practice.

"Video games and refugees", "video games and human rights", this might sound like an oxymoron, a contradiction in terms. Games are fun. Social and political issues are problematic and complex. It is hard to imagine someone playing with these serious topics. Social issues and their solutions have parameters which are difficult to codify and craft because well-meaning actions typically offend at least one group of stakeholders. Games are powerful tools for creating and communicating common views of a problem because they allow users to try out different possible solutions in a safe environment and to reach their own conclusions as to why and how they work. The player thus forms core beliefs about the issue. Likewise, games make it emotionally easy for players to, for instance, try out different ideologies. Users can safely experiment on their computers and simply restart the game if they fail. This low cost of failure stands in stark contrast to the real world, where it is socially terrifying to take action and failure may lead to one being shunned from a social group that is part of their identity. Gaining hands-on experience with differing worldviews is one of the things that games allow. As a result, those students who enjoy playing video games and are accustomed to this medium may find it appropriate to learn about serious social and political topics from the same favourite medium they spend hours in spare time playing with. This leads to a precedent for new media to overtake traditional media regarding influence on social issues (Swain, 2007). Research on the effectiveness of video games aimed at social impact is still not plentiful (Jacobs, 2017; Peng et al., 2010; Ruggiero, 2015; van 't Riet et al., 2018). Since the refugee crisis is an actual current issue, raising awareness about it through the use of this medium could have real-life effects. The results of Chapters Five and Six also provide a

better understanding of how the video-game environment adds to non-formal intercultural, inclusive and diversity education.

Designing a video game is a craft with a double challenge: a solid interactive entertainment should marry with a valid and rich learning experience. When designing *Chuzme* a balance between these two factors, entertainment and learning were taken into consideration. *Chuzme* (Chapter Seven) aims to become an easy and acceptable tool for teaching positive attitudes and habits towards people from other societies and cultures, facilitating objective decision-making, becoming aware of and modifying existing stereotypes and prejudices, and promoting positive evaluations of differences and diversity. It is still too early to speculate if the objectives of the game have been met, as the testing playable beta version of the game has not been completed at the time of writing of this thesis. The first informal evaluation of the concept and game mechanics from the leading experts in the intercultural field during the Sietar Congress 2019 suggests that this game might become a viable alternative to traditional teaching and that it provides intercultural-learning outcomes.

On the whole, the educational use of digital games is not unexplored research territory, in recent years there have been a number of studies of intended to explore whether digital games have any role in supporting educational goals. The present dissertation explored the effectiveness of video games for learning and teaching cultural literacy and their attributes. Transfer of learning between games and real-life is an intriguing topic that the scientific community has not been able to reach a consensus on. This study supports the general idea that video games facilitate cultural literacy learning to some extent. Stronger conclusions are difficult to draw at this point, however. More coherent research with a multidisciplinary approach is needed to explore the effectiveness of video games for learning and teaching cultural literacy.

8.3. Limitations of the study

This research tried to find integrative ways to combine methodology from several disciplines by employing interdisciplinarity to answer the research questions. In the

context of interdisciplinary research on digital games and as any research in general, the present study has its limitation imposed by the time, the method chosen, and resources available.

Firstly, the historical and systematic literature review (Chapter Two, Three and Four) does not claim to be comprehensive but summarises the research on the period under review, the search terms used, the databases included, and whether the outcomes can be included in results to reach the objectives of the study. Secondly, the samples in Study 1 (N = 98) and Study 2 (N = 76) are both relatively small, and after distributing the participants between three games in Study 1, the number in each group became too small for generalisations, especially concerning the effects of the video game *Survival*. A larger sample in each group would yield better results about the contribution of each game. Speaking about the generalizability of the results of Chapter Five, the data were collected from a sample composed of undergraduate students; generalising the findings to the general population is probably inappropriate. The methodology used offers abundant descriptive details about the experiences of the participants involved in the study. Finally, in a medium-scale study (Chapter Six) aiming to hear the voices of a digitally born generation, respondents were assumed to have completed the questionnaire thoroughly and objectively.

8.4. Further research directions

Educators, governments and business leaders are being proactive in theorising and conceptualising ways of up-skilling people to the level required by the Fourth Industrial Revolution. Still, there is a need for research into how people in general and digitally born generations in particular (Millennials and Gen Z) make sense of different cultures. In-depth explorations of the levels of success and failure of specific programs seeking to inculcate cultural literacy should receive equal attention. Multiple investigations are also essential for generating an understanding of the role and impact of informal education in its broadest sense, including the role of the Internet, social and digital media, video-game environments, virtual worlds and augmented reality, in the development of cultural knowledge and cultural literacy.

Analysing state of the art, I have detected the specific educational areas where the influence and impact of video games have not yet been addressed or only a little. Firstly, more RCTs and quasi-experimental study designs should be carried out in future investigations because they could provide rigorous evidence about learning and the impact of games. Secondly, longitudinal studies with long-term analysis of learning experiences would provide more insights into the suitability of some video games for obtaining intercultural learning outcomes. Most of the studies examined the immediate short-term effects of video play. Some, however, point to potential long-term social and personal benefits. To get a better idea of the implications of games for policy and practice, gameplay needs to be studied longitudinally, with repeated assessments (Granic et al., 2014). In order to foster the ability to identify the patterns, achievements and effects of video games, the video game research community strongly needs to adopt a multidimensional approach.

Most studies on video games continue to heavily depend on survey assessments. Self-reports and retrospective evaluations have their use but should not be the only tools used to broaden our understanding. A more multi-method approach is warranted that associates objective observations of in-game behaviours with immediate and long-term "real-world" effects. Most studies make a descriptive analysis of the impact games have on students' attitude towards the subject being taught and their motivation in class. Data is often obtained from surveys filled out by teachers and students after they have used games in the classroom. Games hold enormous potential for learning. However, simply measuring results using standardised test scores or similar traditional measures after the introduction of digital games may very well miss some of the wider learning opportunities that games offer.

In recent years, a number of serious games have been developed aimed at fostering intercultural communication, changing cultural perspectives, raising awareness of immigrants' issues, and promoting more inclusive and tolerant societies.[18]

[18] For overview see Shliakhovchuk, E. (2018) Using Video Games in Intercultural, Diversity and Inclusive Education. Conference Proceedings of 11th annual International Conference of Education, Research and Innovation. Seville, Spain. 12-14, November 2018, pp.10326-10336

Unfortunately, these games have gained little visibility. It makes sense for educators to examine these games and check their potential for intercultural education. The participants of the studies presented in this dissertation generally recognised the potential of video games for introducing new perspectives and changing old attitudes. Further research needs to explore how games can effectively convince players to change their attitudes. This requires elaborating a methodology that makes it possible to robustly detect the effects on perspective change.

Additionally, long-term vs short-term assessment may reveal a sleeping effect of video games (Lavender, 2008; Ruggiero, 2015). Thus, more long-term assessments would help to investigate how attitudes change over time or with repeated gameplay. Overall the concept of learning through serious games, in general, deserves to be researched more closely.

Empirical research on gaming also has to include adult learners and especially the elderly, because now it tends to focus on students and pupils. The primary focus of this study was Generation Z university students. They were rewarded for their participation with additional course credits and, as a result, the Hawthorne effect (Mayo, 1933) must be taken into account, where participants might modify their answers to please researchers. Sampling other population groups and using different settings would enrich further studies on the appropriateness of video games for intercultural and migrant education.

There is clearly much more research and design work to be done to expand the knowledge base on how to create effective serious video games that entertain while promoting lasting change. Designing immersive experiences using empathy is an area for game-design research whose potential is still largely untapped. Testing the efficacy of the conceptual model presented here, identifying the ideal genre for serious video games, designing multiplayer experiences, and determining the best structure for video games to promote lasting change are opportunities that are still far from being exhausted.

Another promising topic is the re-creation of real cities and cultures as supposedly identifiable settings and its influence on adding to the cultural knowledge of gamers about a particular culture (Manchester Cathedral in *Resistance: Fall of Man*, Los Angeles

in *True Crime: Streets of LA*, London in *The Gateway*, New York in *Godfather*, landscapes of Arabic worlds in *Call of Duty* and *Battlefield 3*, and ancient civilizations in *Age of Empires II: The Conquerors* and *Counter-Strike: Global Offensive*) (Bogust, 2011; Penix-Tadsen, 2013; Mortara et al., 2014). Yet another underinvestigated area is the representation of capitalist society's hegemonic values and its influence on gamers. Some authors claim that many video games spread and cement in gamers' minds capitalist values like consumerism, capitalism and acquiring wealth, the free market, perseverance, imperialism by violent expansion and exploration, Eurocentrism, and whiteness (Brown, 2008; 2014; Embrick, Wright, & Lukács, 2012; Frasca, 2000; Higgin, 2009; Schut, 2007; Toscano, 2011). Further research is, therefore, required to investigate how and to what extent gamers absorb the cultures and ideologies built into the narratives and storylines of video games. Finally, Children Now (2001) and Jansz & Martis (2007) revealed that women of colour portrayed as props, bystanders, sex objects, or victims are not seen as strong competitors nor as heroines. Research is needed on how negative portrayals of minority women influence male players and their post-game beliefs as well as non-white female gamers' self-concept.

Despite the exciting research directions mentioned above, researchers of video games still struggle for acceptance, academic credibility, getting published, and funding for this type of research is scarce. However, digital games hold promise as an engaging and entertaining method for acquiring cultural literacy. Considering all of the above, I hope the future will bring broader debate and further valuable research on the impact of video games from a diverse range of perspectives. Video games is a complex phenomenon and research has not yet systematically looked at all its aspects. At this instant, much work remains to be done in the field of research on the intersection of video games and intercultural, diversity and inclusive education.

References

2016 Global Games Market Report. (2016). San Francisco. Retrieved from https://cdn2.hubspot.net/hubfs/700740/Reports/Newzoo_Free_2016_Global_Games_Market_Report.pdf

Aarseth, E. (2001). Computer Game Studies, Year One. *Game Studies, the International Journal of Computer Game Research*, (1). Retrieved from http://www.gamestudies.org/0101/editorial.html

Abt, C. C. (1987). *Serious games*. University Press of America.

Adachi, P. J. C., Hodson, G., & Hoffarth, M. R. (2015). Video game play and intergroup relations: Real world implications for prejudice and discrimination. *Aggression and Violent Behavior*, *25*, 227–236. https://doi.org/10.1016/J.AVB.2015.09.008

Adams, E. (2003). The Designer's Notebook: Not Just Rappers and Athletes: Minorities in Videogames. Retrieved April 22, 2018, from http://www.gamasutra.com/view/feature/131223/the_designers_notebook_not_just_.php

Ahmadi, M., & Helms, M. M. (1994). Cultural Literacy and Business Career Planning. *International Journal of Career Management*, *6*(2), 19–24. https://doi.org/10.1108/09556219410055530

Ahn, S. J. (Grace), Le, A. M. T., & Bailenson, J. (2013). The Effect of Embodied Experiences on Self-Other Merging, Attitude, and Helping Behavior. *Media Psychology*, *16*(1), 7–38. https://doi.org/10.1080/15213269.2012.755877

Alhabash, S., & Wise, K. (2012). PeaceMaker: Changing Students' Attitudes Toward Palestinians and Israelis Through Video Game Play. *International Journal of Communication Christison Gilboa & Inbar*, *6*, 1–20. Retrieved from http://primelab.missouri.edu/pdfs/aw12.pdf

Alvarez, J., Djaouti, D., & Rampnoux, O. (2016). *Apprendre avec les serious games?*

Canopé éditions.

Anderson, C. A., & Bushman, B. J. (2001). Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature. *Psychological Science*, *12*(5), 353–359. https://doi.org/10.1111/1467-9280.00366

Anderson, C. A., Sakamoto, A., Gentile, D. A., Ihori, N., Shibuya, A., Yukawa, S., … Kobayashi, K. (2008). Longitudinal effects of violent video games on aggression in Japan and the United States. *Pediatrics*, *122*(5), 1067–1072. https://doi.org/10.1542/peds.2008-1425

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., … Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151–173. https://doi.org/10.1037/a0018251

Anderton, C. L., & King, E. M. (2016). Promoting multicultural literacies through game-based embodiment: a case study of counselor education students and the role-playing game Oblivion. *On the Horizon*, *24*(1), 44–54. https://doi.org/10.1108/OTH-09-2015-0061

Annetta, L. A. (2010). The "I′s" Have It: A Framework for Serious Educational Game Design. *Review of General Psychology*, *14*(2), 105–112. https://doi.org/10.1037/a0018985

Annetta, L. A., Minogue, J., Holmes, S. Y., & Cheng, M.-T. (2009). Investigating the impact of video games on high school students' engagement and learning about genetics. *Computers & Education*, *53*(1), 74–85. https://doi.org/10.1016/J.COMPEDU.2008.12.020

Anning, B. (2010). Embedding an Indigenous Graduate Attribute into University of Western Sydney's Courses. *The Australian Journal of Indigenous Education*, *39*(S1), 40–52. https://doi.org/10.1375/S1326011100001125

APA Task Force on Violent Media. (2015). *Technical report on the review of the violent video game literature*. Retrieved from http://www.apa.org/pi/families/violent-media.aspx

Apperley, T., & Walsh, C. (2012). What digital games and literacy have in common: a heuristic for understanding pupils' gaming literacy. *Literacy*, *46*(3), 115–122. https://doi.org/10.1111/j.1741-4369.2012.00668.x

Arnab, S., Lim, T., Carvalho, M. B., Bellotti, F., de Freitas, S., Louchart, S., … De Gloria, A. (2015). Mapping learning and game mechanics for serious games analysis. *British Journal of Educational Technology*, *46*(2), 391–411. https://doi.org/10.1111/bjet.12113

Baaden, M., Delalande, O., Ferey, N., Pasquali, S., Waldispühl, J., & Taly, A. (2018). Ten simple rules to create a serious game, illustrated with examples from structural biology. *PLOS Computational Biology*, *14*(3), e1005955. https://doi.org/10.1371/journal.pcbi.1005955

Baek, S. (2005). Exploring customer preferences for online games. *International Journal of Advanced Media and Communication*, *1*(1), 26. https://doi.org/10.1504/IJAMC.2005.007721

Banakou, D., Hanumanthu, P. D., & Slater, M. (2016). Virtual Embodiment of White People in a Black Virtual Body Leads to a Sustained Reduction in Their Implicit Racial Bias. *Frontiers in Human Neuroscience*, *10*, 601. https://doi.org/10.3389/fnhum.2016.00601

Barr, M. (2017). Video games can develop graduate skills in higher education students: A randomised trial. *Computers & Education*, *113*, 86–97. https://doi.org/10.1016/J.COMPEDU.2017.05.016

Bartle, R. (1996). Hearts, Clubs, Diamands, Spades: Players who suit MUDs. Retrieved December 18, 2018, from http://mud.co.uk/richard/hcds.htm

Bartle, R. A. (2003). *Designing virtual worlds*. New Riders Pub.

Bateman, C. M. (2009). *Beyond game design : nine steps towards creating better*

videogames. Charles River Media.

Bateman, C. M., & Boon, R. (2006). *21st century game design*. Charles River Media.

Batson, C. D. (1991). *The Altruism Question: Toward a Social -Psychological Answer.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Bavelier, D., Green, C. S., Pouget, A., & Schrater, P. (2012). Brain plasticity through the life span: learning to learn and action video games. *Annual Review of Neuroscience*, *35*, 391–416. https://doi.org/10.1146/annurev-neuro-060909-152832

Beasley, B., & Standley, T. C. (2002). Shirts vs. Skins: Clothing as an Indicator of Gender Role Stereotyping in Video Games, *5*(3), 279–293. Retrieved from https://pdfs.semanticscholar.org/a869/79702bd24d79e70d5c6ef75decacc70296ba.pdf

Beck, J. C., & Wade, M. (2004). *Got game: how the gamer generation is reshaping business forever*. Harvard Business School Press.

Beck, V. S., Boys, S., Rose, C., & Beck, E. (2012). Violence Against Women in Video Games. *Journal of Interpersonal Violence*, *27*(15), 3016–3031. https://doi.org/10.1177/0886260512441078

Becker, K., & Parker, J. R. (2011). *The guide to computer simulations and games*. Wiley Pub.

Bediou, B., Adams, D. M., Mayer, R. E., Tipton, E., Green, C. S., & Bavelier, D. (2018). Meta-analysis of action video game impact on perceptual, attentional, and cognitive skills. *Psychological Bulletin*, *144*(1), 77–110. https://doi.org/10.1037/bul0000130

Behm-Morawitz, Elizabet, & Ta, D. (2014). Cultivating Virtual Stereotypes?: The Impact of Video Game Play on Racial/Ethnic Stereotypes. *Howard Journal of Communications*, *25*(1), 1–15. https://doi.org/10.1080/10646175.2013.835600

Behm-Morawitz, Elizabeth. (2017). Examining the intersection of race and gender in video game advertising. *Journal of Marketing Communications*, *23*(3), 220–239. https://doi.org/10.1080/13527266.2014.914562

Behm-Morawitz, Elizabeth, Hoffswell, J., & Chen, S.-W. (2016). The Virtual Threat

Effect: A Test of Competing Explanations for the Effects of Racial Stereotyping in Video Games on Players' Cognitions. *Cyberpsychology, Behavior, and Social Networking*, *19*(5), 308–313. https://doi.org/10.1089/cyber.2015.0461

Behm-Morawitz, Elizabeth, & Mastro, D. (2009). The Effects of the Sexualization of Female Video Game Characters on Gender Stereotyping and Female Self-Concept. *Sex Roles*, *61*(11–12), 808–823. https://doi.org/10.1007/s11199-009-9683-8

Behm-Morawitz, Elizabeth, Pennell, H., & Speno, A. G. (2016). The effects of virtual racial embodiment in a gaming app on reducing prejudice. *Communication Monographs*, *83*(3), 396–418. https://doi.org/10.1080/03637751.2015.1128556

Bekkers, V. (2015). Contested knowledge in theory-driven policy analysis: Setting the Dutch stage. In F. van Nispen & P. Scholten (Eds.), *Policy analysis in the Netherlands* (pp. 231–246). Bristol, UK; Chicago, IL, USA: Bristol University Press. https://doi.org/doi:10.2307/j.ctt1t89169.22

Belman, J., & Flanagan, M. (2010). Designing Games to Foster Empathy. *Cognitive Technology*, *14*(2), 5. Retrieved from http://www.maryflanagan.com/wp-content/uploads/cog-tech-si-g4g-article-1-belman-and-flanagan-designing-games-to-foster-empathy.pdf

Belshaw, D. (2012). *What is "digital literacy"? A Pragmatic investigation*. Durham University. Retrieved from http://etheses.dur.ac.uk/3446/

Bennett, M. (1986). A developmental approach to training for intercultural sensitivity. *International Journal of Intercultural Relations*, *10*(2), 179–195. Retrieved from http://www.idrinstitute.org/page.asp?menu1=15

Biddiss, E., & Irwin, J. (2010). Active Video Games to Promote Physical Activity in Children and Youth. *Archives of Pediatrics & Adolescent Medicine*, *164*(7), 664–672. https://doi.org/10.1001/archpediatrics.2010.104

Bilgihan, A., Cobanoglu, C., Nusair, K., Okumus, F., & Bujisic, M. (2013). A quantitative study exploring the difference between gaming genre preferences. *The Computer Games Journal*, *2*(1), 19–40. https://doi.org/10.1007/BF03392334

Billieux, J., Van der Linden, M., Achab, S., Khazaal, Y., Paraskevopoulos, L., Zullino, D., & Thorens, G. (2013). Why do you play World of Warcraft? An in-depth exploration of self-reported motivations to play online and in-game behaviours in the virtual world of Azeroth. *Computers in Human Behavior*, *29*(1), 103–109. https://doi.org/10.1016/J.CHB.2012.07.021

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining Twenty-First Century Skills. In *Assessment and Teaching of 21st Century Skills* (pp. 17–66). Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-007-2324-5_2

Blocker, K. A., Wright, T. J., & Boot, W. R. (2014). Gaming Preferences of Aging Generations. *Gerontechnology : International Journal on the Fundamental Aspects of Technology to Serve the Ageing Society*, *12*(3), 174–184. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/29033699

Boatman J., W. R. (2011). *Time for a Leadership Revolution. Global Leadership Forecast 2011*. Retrieved from https://www.ddiworld.com/ddi/media/trend-research/globalleadershipforecast2011_globalreport_ddi.pdf

Bogost, I. (2011). *How to do things with videogames*. University of Minnesota Press.

Borders, J. B. (2012). *Relationship between personality and video game preferences*. California State University. Retrieved from http://csus-dspace.calstate.edu/bitstream/handle/10211.9/1807/Thesis final.pdf?sequence=1

Borries, F. von., Walz, S. P., Böttger, M., Davidson, D., Kelley, H., & Kücklich, J. (2007). *Space time play: computer games, architecture and urbanism : the next level*. Birkhauser.

Bouciguez, M. J., Santos, G., & Abásolo, M. J. (2014). Towards the use of video games for learning: a survey about video games preferences of Engineering. *Journal of Computer Science and Technology*, *14*(1), 25–31. Retrieved from https://digital.cic.gba.gob.ar/handle/11746/5266

Bouncken, R. B., Brem, A., & Kraus, S. (2016). Multi-cultural teams as sources for

creativity and innovation: The role of cultural diversity on team performance. *International Journal of Innovation Management*, *20*(01), e1650012. https://doi.org/10.1142/S1363919616500122

Bourgonjon, J., Vandermeersche, G., De Wever, B., Soetaert, R., & Valcke, M. (2016). Players' perspectives on the positive impact of video games: A qualitative content analysis of online forum discussions. *New Media & Society*, *18*(8), 1732–1749. https://doi.org/10.1177/1461444815569723

Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., … Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, *94*(C), 178–192. https://doi.org/10.1016/j.compedu.2015.11.003

Braun, C. M. J., & Giroux, J. (1989). Arcade Video Games: Proxemic, Cognitive and Content Analyses. *Journal of Leisure Research*, *21*(2), 92–105. https://doi.org/10.1080/00222216.1989.11969792

Brightman, J. (2013). GTA V exceeds $1 billion in only 3 days | GamesIndustry.biz. Retrieved April 17, 2018, from https://www.gamesindustry.biz/articles/2013-09-20-gta-v-exceeds-USD1-billion-in-only-3-days

British Council. (2013). *Culture At Work. The value of intercultural skills in the workplace.* Retrieved from https://www.britishcouncil.org/sites/default/files/culture-at-work-report-v2.pdf

Brock, A. (2011). '"When Keeping it Real Goes Wrong"': Resident Evil 5, Racial Representation, and Gamers. *Games and Culture*, *6*(5), 429–452. https://doi.org/10.1177/1555412011402676

Brooks, J. S., & Normore, A. H. (2010). Educational Leadership and Globalization: Literacy for a Glocal Perspective. *Educational Policy*, *24*(1), 52–82. https://doi.org/10.1177/0895904809354070

Broudy, H. S. (1990). Cultural Literacy and General Education. *Journal of Aesthetic Education*, *24*(1), 7. https://doi.org/10.2307/3332851

Brown, H. J. (Harry J. (2008). *Videogames and education*. M.E. Sharpe.

Brown, H. J. (Harry J. (2014). *Videogames and education* (2nd ed.). M.E. Sharpe.

Brunborg, G. S., Mentzoni, R. A., Melkevik, O. R., Torsheim, T., Samdal, O., Hetland, J., … Palleson, S. (2013). Gaming Addiction, Gaming Engagement, and Psychological Health Complaints Among Norwegian Adolescents. *Media Psychology*, *16*(1), 115–128. https://doi.org/10.1080/15213269.2012.756374

Burgess, M. C. R., Dill, K. E., Stermer, S. P., Burgess, S. R., & Brown, B. P. (2011). Playing With Prejudice: The Prevalence and Consequences of Racial Stereotypes in Video Games. *Media Psychology*, *14*(3), 289–311. https://doi.org/10.1080/15213269.2011.596467

Bushman, B. J., & Anderson, C. A. (2002). Violent Video Games and Hostile Expectations: A Test of the General Aggression Model. *Personality and Social Psychology Bulletin*, *28*(12), 1679–1686. https://doi.org/10.1177/014616702237649

Callaghan, M., McShane, N., Eguíluz, A. G., & Savin-Baden, M. (2018). Extending the Activity Theory Based Model for Serious Games Design in Engineering to Integrate Analytics. *International Journal of Engineering Pedagogy (IJEP)*, *8*(1). https://doi.org/10.3991/ijep.v8i1.8087

Calvert, S. L., Staiano, A. E., & Bond, B. J. (2013). Electronic gaming and the obesity crisis. *New Directions for Child and Adolescent Development*, *2013*(139), 51–57. https://doi.org/10.1002/cad.20031

Capitalizing on Complexity. Insights from the Global Chief Executive Officer Study. (2011). Armonk, NY. Retrieved from http://www-01.ibm.com/industries/government/ieg/pdf/CEOstudy_2010_GovernmentFocus.pdf

Carvalho, M. B., Bellotti, F., Berta, R., De Gloria, A., Sedano, C. I., Hauge, J. B., … Rauterberg, M. (2015). An activity theory-based model for serious games analysis and conceptual design. *Computers & Education*, *87*, 166–181. https://doi.org/10.1016/J.COMPEDU.2015.03.023

Caver K., Haid M.,Jason M., J. P. (2011). *Why Global Leaders Succeed and Fail.*

Insights from CEOs and Human Resource Professionals Geographic Representation. 1818 Market Street, 33rd Floor, Philadelphia, PA 19103-3614. Retrieved from http://www.manpowergroup.fr/wp-content/uploads/2011/09/Why-Global-Leaders-Succeed-Fail-Etude-RightManagement-ManpowerGroup.pdf

Chase, S. (2011). Narrative inquiry: Still a Field in the Making. In Y. S. L. N.K. Denzin (Ed.), *The SAGE Handbook of Qualitative Research* (4th ed., pp. 421–434). Thousand Oaks: Sage. Retrieved from https://books.google.es/books?hl=uk&lr=&id=AIRpMHgBYqIC&oi=fnd&pg=PA421&dq=Chase,+S.E.+(2011).+Narrative+inquiry:+Still+a+field+in+the+making.+In+N.K.+Denzin+and+Y.S.+Lincoln+(Eds.)+The+SAGE+Handbook+of+Qualitative+Research,+4th+edn.+Thousand+Oaks:+Sage,+

Chen, K. (2004). Civilization and its Disk Contents.Two essays on Civilization and Civilization. *Radical Society*, *30*(2), 95–107. Retrieved from http://www.kenchen.org/writing/civ.htm

Christenbury, L. (1989). Cultural Literacy: A Terrible Idea Whose Time Has Come. *English Journal*, *78*, 14–17.

Cicchirillo, V. (2015). Priming Stereotypical Associations: Violent Video Games and African American Depictions. *Communication Research Reports*, *32*(2), 122–131. https://doi.org/10.1080/08824096.2015.1016148

Clemenson, G. D., & Stark, C. E. L. (2015). Virtual Environmental Enrichment through Video Games Improves Hippocampal-Associated Memory. *The Journal of Neuroscience : The Official Journal of the Society for Neuroscience*, *35*(49), 16116–16125. https://doi.org/10.1523/JNEUROSCI.2580-15.2015

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

Common Sense Media, the J. G. C. C. (2008). *Growing Up Digital: Adults Rate the Educational Potential of New Media and 21st Century Skills*. Retrieved from http://joanganzcooneycenter.org/wp-

content/uploads/2012/11/growingupdigitalppt.pdf

Connolly, T. M., Boyle, E. A., Macarthur, E., Hainey, T., & Boyle, J. M. (2012). A systematic literature review of empirical evidence on computer games and serious games. *Computers & Education*, (59), 661–686. https://doi.org/10.1016/j.compedu.2012.03.004

Cook, P. G. (2009). The Rhetoricity of Cultural Literacy. *Pedagogy: Critical Approaches to Teaching Literature, Language, Composition, and Culture*, *9*(3), 487–500. https://doi.org/10.1215/15314200-2009-008

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. SAGE Publications.

Crogan, P. (2008). Real Lives 2004: The Devil You Know... *Junctures: The Journal for Thematic Dialogue*, (11). Retrieved from http://www.junctures.org/junctures/index.php/junctures/article/view/37/374

Cuhadar, E., & Kampf, R. (2014). Learning about Conflict and Negotiations through Computer Simulations: The Case of Peacemaker. *International Studies Perspectives*, 1–16. https://doi.org/10.1111/insp.12076

Cunningham, C. M. (2016). She Designs Therefore She Is? Evolving Understandings of Video Game Design. In J. Valentine, Keri Duncan Jensenas (Ed.), *Examining the Evolution of Gaming and Its Impact on Social, Cultural, and Political Perspectives* (pp. 147–169). IGI Global. https://doi.org/10.4018/978-1-5225-3832-5.ch004

Dai, D., & Fry, A. (2014). Effect of Video Games on Child Development. Retrieved December 14, 2018, from https://my.vanderbilt.edu/developmentalpsychologyblog/2014/04/effect-of-video-games-on-child-development/

Dake, K. (1991). Orienting Dispositions in the Perception of Risk. *Journal of Cross-Cultural Psychology*, *22*(1), 61–82. https://doi.org/10.1177/0022022191221006

Darvasi, P. (2016). *Empathy, Perspective and Complicity: How Digital Games can Support Peace Education and Conflict Resolution*. 35 Ferozshah Road, ICSSR

Building,1st Floor, New Delhi- 110001, INDIA.

de Freitas, S., & Oliver, M. (2006). How can exploratory learning with games and simulations within the curriculum be most effectively evaluated? *Computers & Education*, *46*(3), 249–264. https://doi.org/10.1016/J.COMPEDU.2005.11.007

De Luna, C. (2012). Learning as Fun: What Video Games Do that Classrooms Do Not. *Momentum*, *1*(1), 1–36. Retrieved from https://repository.upenn.edu/cgi/viewcontent.cgi?article=1010&context=momentum

Deaton, J. E., Barba, C., Santarelli, T., Rosenzweig, L., Souders, V., Mccollum, C., … Singer, M. J. (2005). Virtual environment cultural training for operational readiness (VECTOR). *Virtual Reality*, (8), 156–167. https://doi.org/10.1007/s10055-004-0145-x

Declaration of Principles on Tolerance. (1995). Retrieved from http://unesdoc.unesco.org/images/0015/001518/151830eo.pdf

Dede, C., Nelson, B., Ketelhut, D., Clarke, J, Bowman, C. (2004). Design-based research strategies for studying situated learning in a multi-user virtual environment. In *Proceeding ICLS '04 Proceedings of the 6th international conference on Learning sciences* (pp. 158–165). Santa Monica, California: International Society of the Learning Sciences. Retrieved from https://dl.acm.org/citation.cfm?id=1149144

Dempster, H., & Hargrave, K. (2017). *Understanding public attitudes towards refugees and migrants*. London.

Deskins, T. (2015). *The Effects of Video Games on Sexism Attitudes in Males*. Eastern Michigan University. Retrieved from http://commons.emich.edu/honors

Desmond, K. J., Stahl, S. A., & Graham, M. A. (2011). Combining service learning and diversity education. Making Connections: Interdisciplinary Approaches to Cultural Diversity., *13*(1), 24–30. https://doi.org/10.1177/1363461508094673

Devilly, G., Brown K.., Pickert I., O. R. (2017). An Evolutionary Perspective on Cooperative Behavior in Gamers. *Psychology of Popular Media Culture*, *6*(3), 208–221. https://doi.org/10.1037/ppm0000097

Díaz-Rico, L. T., & Weed, K. Z. (2010). *The crosscultural, language, and academic development handbook : a complete K-12 reference guide*. Pearson/Allyn & Bacon.

Dickerman, C., Christensen, J., & Kerl-McClain, S. B. (2008). Big Breasts and Bad Guys: Depictions of Gender and Race in Video Games. *Journal of Creativity in Mental Health*, *3*(1), 20–29. https://doi.org/10.1080/15401380801995076

Dickey, M. D. (2005). Engaging by design: How engagement strategies in popular computer and video games can inform instructional design. *Educational Technology Research and Development*, *53*(2), 67–83. https://doi.org/10.1007/BF02504866

Dickey, M. D. (2007). Game design and learning: a conjectural analysis of how massively multiple online role-playing games (MMORPGs) foster intrinsic motivation. *Educational Technology Research and Development*, *55*(3), 253–273. https://doi.org/10.1007/s11423-006-9004-7

Diehl, W. C., & Prins, E. (2008). Unintended Outcomes in *Second Life* : Intercultural Literacy and Cultural Identity in a Virtual World. *Language and Intercultural Communication*, *8*(2), 101–118. https://doi.org/10.1080/14708470802139619

Dietz, T. L. (1998). An Examination of Violence and Gender Role Portrayals in Video Games: Implications for Gender Socialization and Aggressive Behavior. *Sex Roles*, *38*(5/6), 425–442. https://doi.org/10.1023/A:1018709905920

Dill, K. E., Gentile, D. A., Richter, W. A., & Dill, J. C. (2005). Violence, Sex, Race, and Age in Popular Video Games: A Content Analysis. In E. Cole & J. H. Daniel (Ed.), *Featuring females: Feminist analyses of media* (pp. 115–130). Washington DC: American Psychological Association. https://doi.org/10.1037/11213-008

Dill, K. E., & Thill, K. P. (2007). Video Game Characters and the Socialization of Gender Roles: Young People's Perceptions Mirror Sexist Media Depictions. https://doi.org/10.1007/s11199-007-9278-1

Dille, F., & Zuur Platten, J. (2008). *The ultimate guide to video game writing and design*. Lone Eagle.

Dondlinger, M. J. (2007). *Educational Video Game Design: A Review of the Literature*.

Journal of Applied Educational Technology (Vol. 4). Retrieved from https://www.researchgate.net/publication/238444705

Dorman, S. M. (1997). Video and computer games: effect on children and implications for health education. *The Journal of School Health*, *67*(4), 133–138. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9130190

Douglas, M. (1978). *Cultural Bias*. The Royal Anthropological Institute.

Dudeney, G., Hockly, N., & Pegrum, M. (2013). *Digital literacies (research and resources in language teaching)* (1st ed.). Routledge.

Duggan, M. (2015). *Gaming and Gamers*. Retrieved from http://www.pewinternet.org/2015/12/15/gaming-and-gamers/

Durkin, K., & Barber, B. (2002). Not so doomed: computer game play and positive adolescent development. *Journal of Applied Developmental Psychology*, *23*(4), 373–392. https://doi.org/10.1016/S0193-3973(02)00124-7

Earley, P. C., & Ang, S. (2003). *Cultural intelligence: individual interactions across cultures*. Stanford University Press.

Egenfeldt-Nielsen, S., Smith, J. H., Tosca, S. P., & Egenfeldt-Nielsen, S. (2015). *Understanding Video Games: The Essential Introduction* (2nd ed.). Routledge.

Embrick, D. G., Wright, J. T., & Lukács, A. (2012). *Social exclusion, power and video game play : new research in digital media and technology*. Lexington Books.

ESA. (2018). *2018 Essential Facts About the Computer and Video Game Industry*. Washington DC. Retrieved from http://www.theesa.com/wp-content/uploads/2018/05/EF2018_FINAL.pdf

Everett, A. (2005). Serious Play: Playing with Race in Contemporary Gaming Culture. In *in Handbook of Computer Game Studies, eds. Joost Raessens and Jeffrey Goldstein* (pp. 311–326). Cambridge, MA: The MIT Press. Retrieved from https://sisis.rz.htw-berlin.de/inh2006/1234533.pdf

Everett, A., & Watkins, S. C. (2008). The Power of Play: The Portrayal and Performance

of Race in Video Games. In Katie Salen (Ed.), *The Ecology of Games: Connecting Youth, Games, and Learning* (pp. 141–166). Cambridge, MA: The MIT Press. https://doi.org/10.1162/dmal.9780262693646.141

Facer K., Furlong J., Furlong R., S. R. (2003). *Screenplay: children and computing in the home*. RoutledgeFalmer.

Fassinger, R. E. (2005). Paradigms, praxis, problems, and promise: Grounded theory in counseling psychology research. *Journal of Counseling Psychology*, *52*(2), 156–166. https://doi.org/10.1037/0022-0167.52.2.156

Financial Tribune. (2015). UNESCO Chief Calls for New Forms of Cultural Literacy | Financial Tribune. Retrieved May 18, 2018, from https://financialtribune.com/articles/art-and-culture/17309/unesco-chief-calls-for-new-forms-of-cultural-literacy

Flanagan, M. (2018). *Game-Changers: Playing Games for Good*. Davos, Switzerland: World Economic Forum Annual Meeting. Retrieved from https://www.weforum.org/events/world-economic-forum-annual-meeting-2018/sessions/game-changers-playing-games-for-good

Flavell, H., Thackrah, R., & Hoffman, J. (2013). Developing Indigenous Australian cultural competence: A model for implementing Indigenous content into curriculum. *Journal of Teaching and Learning for Graduate Employability*, *4*(1), 39–57.

Formosa, P., Ryan, M., & Staines, D. (2016). Papers, Please and the systemic approach to engaging ethical expertise in videogames. *Ethics and Information Technology*, *18*(3), 211–225. https://doi.org/10.1007/s10676-016-9407-z

Franceschini, S., Gori, S., Ruffino, M., Viola, S., Molteni, M., & Facoetti, A. (2013). Action Video Games Make Dyslexic Children Read Better. *Current Biology*, *23*(6), 462–466. https://doi.org/10.1016/j.cub.2013.01.044

Frederick, H. J., Corvetto, M. A., Hobbs, G. W., & Taekman, J. (2011). The "Simulation Roulette" game. *Simulation in Healthcare: Journal of the Society for Simulation in Healthcare*, *6*(4), 244–249. https://doi.org/10.1097/SIH.0b013e31820e0094

Freire, P. (1976). *Education, the practice of freedom*. Writers and Readers Publishing Cooperative.

Froschauer, J., Seidel, I., Gärtner, M., Berger, H., & Merkl, D. (2010). Design and Evaluation of a Serious Game for Immersive Cultural Training. In *International Conference on Virtual Systems and Multimedia* (pp. 253–260). Seoul, Korea: IEEE CS Press. Retrieved from http://www.ec.tuwien.ac.at/~dieter/research/publications/vsmm2010.pdf

Fu, K., Hainey, T., & Baxter, G. (2016). A Systematic Literature Review to Identify Empirical Evidence on the use of Computer Games in Business Education and Training. In *European Conference on Games Based Learning* (pp. 232–239). Retrieved from https://search.proquest.com/openview/4d9c65a80b6b12bade6cca9fc6db21a6/1?pq-origsite=gscholar&cbl=396495

Funk, J. B. (2001). Girls Just Want to Have Fun. Retrieved from https://culturalpolicy.uchicago.edu/sites/culturalpolicy.uchicago.edu/files/funk2.pdf

Funk, Jeanne B., & Buchman, D. D. (1996). Playing Violent Video and Computer Games and Adolescent Self-Concept. *Journal of Communication*, *46*(2), 19–32. https://doi.org/10.1111/j.1460-2466.1996.tb01472.x

Gamberini, L., Chittaro, L., Spagnolli, A., & Carlesso, C. (2015). Psychological response to an emergency in virtual reality: Effects of victim ethnicity and emergency type on helping behavior and navigation. https://doi.org/10.1016/j.chb.2015.01.040

Gao, Z., Chen, S., Pasco, D., & Pope, Z. (2015). A meta-analysis of active video games on health outcomes among children and adolescents. *Obesity Reviews*, *16*(9), 783–794. https://doi.org/10.1111/obr.12287

García Ochoa, G., McDonald, S., & Monk, N. (2016). Embedding Cultural Literacy in Higher Education: a new approach. *Intercultural Education*, *27*(6), 546–559. https://doi.org/10.1080/14675986.2016.1241551

Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, Motivation, and Learning: A

Research and Practice Model. *Simulation & Gaming*, *33*(4), 441–467. https://doi.org/10.1177/1046878102238607

Gassmann, O. (2008). Multicultural Teams: Increasing Creativity and Innovation by Diversity. *Creativity and Innovation Management*, *10*(2), 88–95. https://doi.org/10.1111/1467-8691.00206

Gay, G. (2010). *Culturally responsive teaching : theory, research, and practice*. Teachers College.

Gee, J. P. (2005). *Why video games are good for your soul: pleasure and learning*. Common Ground Publishing.

Gee, J., & Shaffer D. (2010). *Looking Where the Light is Bad Looking Where the Light is Bad Video Games and the Future of Assessment* (Epistemic Games Group Working Paper No. 02). Wisconsin. Retrieved from https://jamespaulgee.com/pubs/video-games-and-assessment/

Gee, J. P. (2003). *What video games have to teach us about learning and literacy* (1st ed.). Palgrave Macmillan.

Gentile, D. A., Anderson, C. A., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K., … Sakamoto, A. (2009). The effects of prosocial video games on prosocial behaviors: international evidence from correlational, longitudinal, and experimental studies. *Personality & Social Psychology Bulletin*, *35*(6), 752–763. https://doi.org/10.1177/0146167209333045

Gentile, D. A., Bailey, K., Bavelier, D., Brockmyer, J. F., Cash, H., Coyne, S. M., … Young, K. (2017). Internet Gaming Disorder in Children and Adolescents. *Pediatrics*, *140*(Suppl 2), S81–S85. https://doi.org/10.1542/peds.2016-1758H

Gerber H, A. S. (2016). Race and Culture in Video Games. Openig the dialogue. *Voya*, (June), 52–52. Retrieved from http://voyamagazine.com/tags/hannah-gerber/

Giammarco, E. A., Schneider, T. J., Carswell, J. J., & Knipe, W. S. (2015). Video game preferences and their relation to career interests. *Personality and Individual Differences*, *73*, 98–104. https://doi.org/10.1016/J.PAID.2014.09.036

Gillentine, L. C. (2007). *Do Modern Video Games Impact the Cultural Perceptions and Acceptance of Racial Stereotypes? A Qualitative Assessment of Video Game Usage*. Baylor University. Retrieved from https://baylor-ir.tdl.org/baylor-ir/bitstream/handle/2104/5053/Lacey_Chapman_phd.pdf;sequence=1

Glaubke, C. R., Miller, P., Parker, M. A., Espejo, E. (2001). *Fair Play? Violence, Gender and Race in Video Games.* Oakland, CA.: Children NOW. Retrieved from https://eric.ed.gov/?id=ED463092

Glum, J. (2015). Marketing To Generation Z: Millennials Move Aside As Brands Shift Focus To Under-18 Customers. Retrieved September 7, 2018, from https://www.ibtimes.com/marketing-generation-z-millennials-move-aside-brands-shift-focus-under-18-customers-1782220

Gottschalk, S. (1995). Videology: Video-Games as Postmodern Sites/Sights of Ideological Reproduction. *Symbolic Interaction*, *18*(1), 1–18. https://doi.org/10.1525/si.1995.18.1.1

Gozli, D. G., Bavelier, D., & Pratt, J. (2014). The effect of action video game playing on sensorimotor learning: Evidence from a movement tracking task. *Human Movement Science*, *38*, 152–162. https://doi.org/10.1016/j.humov.2014.09.004

Granic, I., Lobel, A., & Engels, R. C. M. E. (2014). The benefits of playing video games. *The American Psychologist*, *69*(1), 66–78. https://doi.org/10.1037/a0034857

Green, C. Shawn, & Bavelier, D. (2006). Effect of action video games on the spatial distribution of visuospatial attention. *Journal of Experimental Psychology: Human Perception and Performance*, *32*(6), 1465–1478. https://doi.org/10.1037/0096-1523.32.6.1465

Green, C. Shawn, Pouget, A., & Bavelier, D. (2007). Action videogame playing improves bayesian inference for perceptual decision-making. *Journal of Vision*, *7*(9), 42–42. https://doi.org/10.1167/7.9.42

Green, C S, & Bavelier, D. (2007). Action-video-game experience alters the spatial resolution of vision. *Psychological Science*, *18*(1), 88–94.

https://doi.org/10.1111/j.1467-9280.2007.01853.x

Greenfield, G. (2004). Writing the History of the Future: The Killing Game. *The Asia-Pacific Journal: Japan Focus*, *2*(7), 1–3. Retrieved from http://apjjf.org/-Gerard-Greenfield/2130/article.html

Greenfield, P. M. (1984). *Mind and media: the effects of television, video games, and computers* (1st ed.). Psychology Press & Routledge Classic Editions.

Greitemeyer, T., & Mügge, D. O. (2014). Video Games Do Affect Social Outcomes. *Personality and Social Psychology Bulletin*, *40*(5), 578–589. https://doi.org/10.1177/0146167213520459

Griffiths, M. D., Kuss, D. J., & King, D. L. (2012). Video Game Addiction: Past, Present and Future. *Current Psychiatry Reviews*, *8*. Retrieved from http://irep.ntu.ac.uk/id/eprint/5976/1/211418_PubSub798_kuss.pdf

Griffiths, M. (2002). The educational benefits of videogames. *Education and Health*, *3*, 47–51. Retrieved from www.clickhealth.com

Griffiths, Mark. (2003). The educational benefits of videogames. *Education and Health*, *20*(3), 47–51. Retrieved from http://sheu.org.uk/sites/sheu.org.uk/files/imagepicker/1/eh203mg.pdf

Gros Salvat, B. (2000). La dimensión socioeducativa de los videojuegos. *Revista Electrónica de Tecnología Educativa*, *12*(00). Retrieved from http://www.quadernsdigitals.net/datos_web/hemeroteca/r_11/nr_180/a_8843/8843.pdf

Guillén-Nieto, V., & Aleson-Carbonell, M. (2012). Serious games and learning effectiveness: The case of It's a Deal! *Computers & Education*, *58*(1), 435–448. https://doi.org/10.1016/J.COMPEDU.2011.07.015

Gutiérrez, E. J. D. (2014). Video Games and Gender-based Violence. *Procedia - Social and Behavioral Sciences*, *132*, 58–64. https://doi.org/10.1016/J.SBSPRO.2014.04.278

Hakimi, H. (2018). *Understanding the Drivers of Migration to Europe: Lessons from Afghanistan for the Current Refugee Crisis*. London. Retrieved from www.chathamhouse.org

Hall, E. T. (Edward T. (1977). *Beyond culture* (1st ed.). Anchor Books.

Hamermesh, D. S. (2013). *Beauty pays: why attractive people are more successful*. Princeton University Press.

Hanover Research. (2011). *A crosswalk of 21st Centuary Skills*. Retrieved from http://www.montgomeryschoolsmd.org/uploadedFiles/about/strategicplan/21stCenturySkills.pdf

Happ, C., Melzer, A., & Steffgen, G. (2013). Superman vs. BAD Man? The Effects of Empathy and Game Character in Violent Video Games. *Cyberpsychology, Behavior, and Social Networking*, *16*(10), 774–778. https://doi.org/10.1089/cyber.2012.0695

Harteveld, C. (2011). *Triadic Game Design: Balancing Reality, Meaning and Play* (1st ed.). Springer Publishing Company. Retrieved from https://dl.acm.org/citation.cfm?id=1972536

Hartmann, T., & Klimmt, C. (2006). Gender and Computer Games: Exploring Females' Dislikes. *Journal of Computer-Mediated Communication*, *11*(4), 910–931. https://doi.org/10.1111/j.1083-6101.2006.00301.x

Hasler, B. S., Spanlang, B., & Slater, M. (2017). Virtual race transformation reverses racial in-group bias. *PLOS ONE*, *12*(4), e0174965. https://doi.org/10.1371/journal.pone.0174965

Hassell B. (2017). Are You Developing Global Leaders? Retrieved April 6, 2018, from http://www.clomedia.com/2016/07/27/are-you-developing-global-leaders/

Hayes, E. (2007). Gendered Identities at Play. *Games and Culture*, *2*(1), 23–48. https://doi.org/10.1177/1555412006294768

Henry, P. J., & Sears, D. O. (2002). The Symbolic Racism 2000 Scale. *Political Psychology*. International Society of Political Psychology.

https://doi.org/10.2307/3792290

Henson, R. (2016). *Successful Global Leadership*. New York: Palgrave Macmillan US. https://doi.org/10.1057/978-1-137-58990-3

Herz, J. C. (Jessie C. (1997). *Joystick nation : how videogames ate our quarters, won our hearts, and rewired our minds*. Little, Brown, and Co.

Heyward, M. (2004). *Intercultural Literacy and the International School*. University of Tasmania. Retrieved from https://eprints.utas.edu.au/423/

Higgin, T. (2009). Blackless Fantasy The Disappearance of Race in Massively Multiplayer Online Role-Playing Games. *Games and Culture*, *4*(1), 3–26. https://doi.org/10.1177/1555412008325477

Hilgard, J., Engelhardt, C. R., & Rouder, J. N. (2017). Overstated evidence for short-term effects of violent games on affect and behavior: A reanalysis of Anderson et al. (2010). *Psychological Bulletin*, *143*(7), 757–774. https://doi.org/10.1037/bul0000074

Hirsch, E. D. (Eric D., Kett, J. F., & Trefil, J. (1988). *Cultural literacy : what every American needs to know*. Vintage Books.

Honna, N. (2008). English across Cultures and Intercultural Awareness. *Intercultural Communication Studies 2008*, *XVII: 2*. Retrieved from https://web.uri.edu/iaics/files/01-Noboyuki-Honna.pdf

Horace McCormick. (2017). *Preparing Leaders to Succeed in a Global World*. Retrieved from http://www.kenan-flagler.unc.edu/~/media/Files/documents/executive-development/Preparing for Global Leaders v2.pdf

Hsu, H.-Y., & Wang, S.-K. (2010). Using Gaming Literacies to Cultivate New Literacies. *Simulation & Gaming*, *41*(3), 400–417. https://doi.org/10.1177/1046878109355361

Hubert-Wallander, B., Green, C. S., & Bavelier, D. (2011). Stretching the limits of visual attention: the case of action video games. *Wiley Interdisciplinary Reviews: Cognitive Science*, *2*(2), 222–230. https://doi.org/10.1002/wcs.116

Hunicke, R., Leblanc, M., & Zubek, R. (2004). *MDA: A Formal Approach to Game Design and Game Research*. *Paper presented at AAI Workshop on Challenges in Game AI*. San Jose, CA.

Incheon Declaration Framework for Action for the implementation of Sustainable Development Goal 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. (2016). Retrieved from http://unesdoc.unesco.org/images/0024/002456/245656E.pdf

Jackson, L. A., Witt, E. A., Games, A. I., Fitzgerald, H. E., von Eye, A., & Zhao, Y. (2012). Information technology use and creativity: Findings from the Children and Technology Project. *Computers in Human Behavior*, *28*(2), 370–376. https://doi.org/10.1016/J.CHB.2011.10.006

Jacobs, R. S. (2017). *Playing to win over: validating persuasive games*. ERMeCC-Erasmus Research Center for Media Communication and Culture. Retrieved from https://repub.eur.nl/pub/102769

Jansz, J. (2005). The Emotional Appeal of Violent Video Games for Adolescent Males. *Communication Theory*, *15*(3), 219–241. https://doi.org/10.1111/j.1468-2885.2005.tb00334.x

Jansz, J., & Martis, R. G. (2007). The Lara Phenomenon: Powerful Female Characters in Video Games. *Sex Roles*, *56*(3–4), 141–148. https://doi.org/10.1007/s11199-006-9158-0

Jin, Y., Ma, M., Hua, D., & Coward, S. (2017). Games for Mental and Moral Development of Youth: A Review of Empirical Studies (pp. 245–258). Springer, Cham. https://doi.org/10.1007/978-3-319-70111-0_23

Johnson, P. C. (2014). Cultural literacy, cosmopolitanism and tourism research. *Annals of Tourism Research*, *44*, 255–269. https://doi.org/10.1016/J.ANNALS.2013.10.006

Johnston, R. (2018). Who is Generation Z and How Will They Impact the Future of Associations? Retrieved September 7, 2018, from https://www.naylor.com/associationadviser/generation-z-future-associations/

Jordan Shapiro. (2014). Here's How Gamer-Teachers Use Video Games In The Classroom. Retrieved February 26, 2018, from https://www.forbes.com/sites/jordanshapiro/2014/10/29/heres-how-gamer-teachers-use-video-games-in-the-classroom/#951026962269

Kato, P. M. (2010). Video Games in Health Care: Closing the Gap. *Review of General Psychology*, *14*(2), 113–121. https://doi.org/10.1037/a0019441

Kay, K., & Greenhill, V. (2011). Twenty-First Century Students Need 21st Century Skills. In *Bringing Schools into the 21st Century* (pp. 41–65). Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-007-0268-4_3

Kelly, H., Howell, K., Glinert, E., Holding, L., Swain, C., Burrowbridge, A., & Roper, M. (2007). How to build serious games. *Communications of the ACM*, *50*(7), 44–49. https://doi.org/10.1145/1272516.1272538

Kelman, H. C. (2006). INTERESTS, RELATIONSHIPS, IDENTITIES: Three Central Issues for Individuals and Groups in Negotiating Their Social Environment. *Annu. Rev. Psychol*, *57*, 1–26. https://doi.org/10.1146/annurev.psych.57.102904.190156

Kepes, S., Bushman, B. J., & Anderson, C. A. (2017). Violent video game effects remain a societal concern: Reply to Hilgard, Engelhardt, and Rouder (2017). *Psychological Bulletin*, *143*(7), 775–782. https://doi.org/10.1037/bul0000112

Kirsh, S. J. (2012). *Children, adolescents, and media violence: a critical look at the research* (Second). SAGE Publications.

Klevjer,R., H. J. F. (2017). The Structure of Videogame Preference. *Games and Culture*, *17*(2). https://doi.org/10.1177/1555412010391089

Kobler, B., Lattes, P., Hovy, B. (2017). *International Migration Report 2017: Highlights*. New York. Retrieved from http://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/MigrationReport2017_Highlights.pdf

Kondrat, X. (2015). How is female gender generally represented in various genres of video games? *Journal of Comparative Research in Anthropology and Sociology*,

6(1), 171–193. Retrieved from http://compaso.eu

Kors, M. J. L., Ferri, G., Van Der Spek, E. D., Ketel, C., & Schouten, B. A. M. (2016). A Breathtaking Journey. On the Design of an Empathy--Arousing Mixed--Reality Game. In *CHI PLAY '16 Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play, 2016* (pp. 91–104). https://doi.org/10.1145/2967934.2968110

Koster, R. (2013). *A theory of fun for game design* (2nd ed.). O'Reilly Media.

Kühn, S, Gleich, T., Lorenz, R. C., Lindenberger, U., & Gallinat, J. (2014). Playing Super Mario induces structural brain plasticity: gray matter changes resulting from training with a commercial video game. *Molecular Psychiatry*, *19*(2), 265–271. https://doi.org/10.1038/mp.2013.120

Kühn, Simone, Berna, F., Lüdtke, T., Gallinat, J., & Moritz, S. (2018). Fighting Depression: Action Video Game Play May Reduce Rumination and Increase Subjective and Objective Cognition in Depressed Patients. *Frontiers in Psychology*, *9*, 129. https://doi.org/10.3389/fpsyg.2018.00129

Kung-Chien, D. K. (2012). *Reward preference in video games*. PRINCETON UNIVERSITY. Retrieved from ftp://ftp.cs.princeton.edu/reports/2012/931.pdf

Kurian, G. T. (2013). *The AMA Dictionary of Business and Management*. New York : Amacom. Retrieved from http://www.worldcat.org/title/ama-dictionary-of-business-and-management/oclc/831676605

Lane H, Maznevski M, Dietz J, D. J. (2010). *International management behavior : leading with a global mindset* (6th ed.). Wiley. Retrieved from https://www.wiley.com/en-us/International+Management+Behavior%3A+Leading+with+a+Global+Mindset%2C+6th+Edition-p-9780470685303

Lane, H. C., Hays, M., Core, M., Gomboc, D., Forbell, E., & Rosenberg, M. (2008). Coaching Intercultural Communication in a Serious Game. *Proceedings of the 16th International Conference on Computer Systems and Technologies*. Retrieved from

http://ict.usc.edu/pubs/Coaching Intercultural Communication in a Serious Game.pdf

Lane, H. C., & Ogan, A. E. (2009). Virtual Environments for Cultural Learning. In Editors and Co-Chairs:, Scotty D. Craig, & Darina Dicheva (Eds.), *AIED 2009: 14th International Conference on Artificial Intelligence in Education Workshops Proceedings*. Brighton, UK. Retrieved from http://chrisharrison.net/amyogan/files/Lane-Ogan-CATS09.pdf

Lanham, M. (2017). *Augmented reality game development*. Packt Publishing.

Latorre, Ó. P. (2010). *Análisis de la significación del videojuego Fundamentos teóricos del juego, el mundo narrativo y la enunciación interactiva como perspectivas de estudio del discurso*. Universitat Pompeu Fabra. Retrieved from https://www.tdx.cat/bitstream/handle/10803/7273/topl.pdf

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and Validation of a Game Addiction Scale for Adolescents. *Media Psychology*, *12*(1), 77–95. https://doi.org/10.1080/15213260802669458

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2011). The effects of pathological gaming on aggressive behavior. *Journal of Youth and Adolescence*, *40*(1), 38–47. https://doi.org/10.1007/s10964-010-9558-x

Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., Vitak, J., & J. (2008). *Teens, Video Games, and Civics Teens' gaming experiences are diverse and include significant social interaction and civic engagement*.

Lenhart, A. (2015). A Majority of American Teens Report Access to a Computer, Game Console, Smartphone and a Tablet. Retrieved September 8, 2018, from http://www.pewinternet.org/2015/04/09/a-majority-of-american-teens-report-access-to-a-computer-game-console-smartphone-and-a-tablet/

Leonard, D. (2003). Live in Your World, Play in Ours: Race, Video Games, and Consuming the Other. *Studies in Media & Information Literacy Education*, *3*(4), 1–9. https://doi.org/10.3138/sim.3.4.002

Leonard D. (2004). Race, Sports Video Games and Becoming the Other. *Intelligent Agent*, *4*(4). Retrieved from http://www.intelligentagent.com/archive/Vol4_No4_gaming_leonard.htm

Levy, O., Beechler, S., Taylor, S., & Boyacigiller, N. (2007). What We Talk About When We Talk About "Global Mindset": Managerial Cognition in Multinational Corporations. *Journal of In Ternational Business Studies* , *38*(2), 231–258. Retrieved from https://www8.gsb.columbia.edu/apec/sites/apec/files/files/discussion/44LevyMindset.pdf

Li, R., Polat, U., Makous, W., & Bavelier, D. (2009). Enhancing the contrast sensitivity function through action video game training. *Nature Neuroscience*, *12*(5), 549–551. https://doi.org/10.1038/nn.2296

Li, R. W., Ngo, C., Nguyen, J., & Levi, D. M. (2011). Video-Game Play Induces Plasticity in the Visual System of Adults with Amblyopia. *PLoS Biology*, *9*(8), e1001135. https://doi.org/10.1371/journal.pbio.1001135

Linkedin, L. co. (2018). Workplace Learning & Development Report 2018 | LinkedIn Learning. Retrieved March 21, 2018, from https://learning.linkedin.com/resources/workplace-learning-report-2018?src=li-scin&veh=7010d000001BicLAASv1&cid=7010d000001BicLAAS&bf=1#

Lisak, A., & Erez, M. (2015). Leadership emergence in multicultural teams: The power of global characteristics. *Journal of World Business*, (50), 3–14. https://doi.org/10.1016/j.jwb.2014.01.002

Liu, S., Volcic, Z., & Gallois, C. (2014). Immigraton and Acculturation. In *Intercultural Communication. Global Cultures and Contexts* (pp. 199–222). SAGE Publishing. Retrieved from https://uk.sagepub.com/sites/default/files/upm-binaries/64988_Liu__Introducing_Intercultural_communication_9.pdf

Livermore, D. A. (2009). *Leading with cultural intelligence : the real secret to success*. AMACOM.

Loffredo, D., & Tavakkoli, A. (2016). Analyzing Motives, Preferences, and Experiences in Video Game Play. In *The 20th World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI 2016)* (pp. 45–49). Orlando, Florida, USA. Retrieved from http://www.iiis.org/CDs2016/CD2016Summer/papers/SA540WG.pdf

Lohmeyer, E. (2017). Papers, Please as Critical Making: A Review. *Press Start*, *4*(1), 11–16.

Loton, D. (2014). *Video Game Addiction and Engagement in Adult Gamers: Differentiation Based on Relationships with Health and Functioning*. Victoria University. Retrieved from http://vuir.vu.edu.au/25835/

Lucas, K., & Sherry, J. L. (2004). Sex Differences in Video Game Play: *Communication Research*, *31*(5), 499–523. https://doi.org/10.1177/0093650204267930

Lynch, T., Tompkins, J. E., van Driel, I. I., & Fritz, N. (2016). Sexy, Strong, and Secondary: A Content Analysis of Female Characters in Video Games across 31 Years. *Journal of Communication*, *66*(4), 564–584. https://doi.org/10.1111/jcom.12237

MacCallum-Stewart, E. (2008). Real Boys Carry Girly Epics: Normalising Gender Bending in Online Games. *Eludamos. Journal for Computer Game Culture*, *2*(1), 27–40. Retrieved from http://www.eludamos.org/index.php/eludamos/article/view/27

Malone, T., & Lepper M. (1987). Making Learning Fun: A Taxonomy of Intrinsic Motivations for Learning. In M. J. Snow, R., Farr (Ed.), *Aptitude, Learning, and Instruction Volume 3: Conative and Affective Process Analyses* (pp. 223–253). Hillsdale, NJ. Retrieved from http://ocw.metu.edu.tr/mod/resource/view.php?id=1311

Malone, T. W. (1981). *Toward a Theory of Intrinsically Instruction* Motivating*. *COGNITIVE SCIENCE* (Vol. 4). Retrieved from https://pdfs.semanticscholar.org/115f/a48ed8f73153220352e0e58ea0a55ecad351.pd

f

Manning, T. T. (2003). Leadership Across Cultures: Attachment Style Influences. *Journal OfLeadership & Organizational Studies, No. 3, Vol. 9, Pp. 20-30*.

Marfisi-Schottman, I., George, S., & Tarpin-Bernard, F. (2010). Tools and Methods for Efficiently Designing Serious Games. In *4th Europeen Conference on Games Based Learning ECGBL2010, 4* (pp. 226–23). Copenhagen, Denmark. Retrieved from http://www.pixelearning.com

Markey, P. M.,Markey, C. N.,French, J. E. (2015). Violent video games and real-world violence: Rhetoric versus data. *Psychology of Popular Media Culture*, *4*(4), 277–295.

Marsh, T. (2010). Activity-Based Scenario Design, Development and Assessment in Serious Games. In *Gaming and Cognition: Theories and Practice from the Learning Sciences* (pp. 213–226). IGI Global. https://doi.org/10.4018/978-1-61520-717-6.ch010

Marsh, T., & Nardi, B. (2014). Spheres and Lenses: Activity-Based Scenario / Narrative Approach for Design and Evaluation of Entertainment through Engagement. In *Entertainment Computing – ICEC 2014* (pp. 42–51). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-45212-7_6

Martey, R. M., & Consalvo, M. (2011). Performing the Looking-Glass Self: Avatar Appearance and Group Identity in *Second Life*. *Popular Communication*, *9*(3), 165–180. https://doi.org/10.1080/15405702.2011.583830

Martins, N., Williams, D. C., Harrison, K., & Ratan, R. A. (2009). A Content Analysis of Female Body Imagery in Video Games. *Sex Roles, Springer*. https://doi.org/10.1007/s11199-009-9682-9

Mayo, E. (1933). *The human problems of an industrial civilization,*. New York: Macmillan Co. Retrieved from https://www.worldcat.org/title/human-problems-of-an-industrial-civilization/oclc/304903

McCall, M. W., & Hollenbeck, G. P. (2002). *Developing global executives : the lessons*

of international experience. Harvard Business School Press.

Mcclarty, K. L., Orr, A., Frey, P. M., Dolan, R. P., Vassileva, V., & Mcvay, A. (2012). *A Literature Review of Gaming in Education Research Report*. Retrieved from http://www.pearsonassessments.com/research.

McCrindle, M. (2006). *New generations at work: attracting, recruiting, retraining and training Generation*. New South Wales: McCrindle Research. Retrieved from https://www.voced.edu.au/content/ngv%3A57840

Mcfarlane, A., Sparrowhawk, A., & Heald, Y. (2002). *Report on the educational use of games*. Cambridge. Retrieved from http://consilr.info.uaic.ro/uploads_lt4el/resources/pdfengReport on the educational use of games.pdf

McGonigal, J. (2011). *Reality is broken : why games make us better and how they can change the world*. Penguin Group.

Meeuwes, A. C. (2016). *Persuasiveness Against All Odds?* Retrieved from http://hdl.handle.net/2105/34613

Mentzoni, R. A., Brunborg, G. S., Molde, H., Myrseth, H., Skouverøe, K. J. M., Hetland, J., & Pallesen, S. (2011). Problematic Video Game Use: Estimated Prevalence and Associations with Mental and Physical Health. *Cyberpsychology, Behavior, and Social Networking*, *14*(10), 591–596. https://doi.org/10.1089/cyber.2010.0260

Mihara, S., & Higuchi, S. (2017). Cross-sectional and longitudinal epidemiological studies of Internet gaming disorder: A systematic review of the literature. *Psychiatry and Clinical Neurosciences*, *71*(7), 425–444. https://doi.org/10.1111/pcn.12532

Miller, E. K. (1994). Diversity and its management: Training managers for cultural competence within the organization. *Management Quarterly*, *Vol. 35*(Issue 2), 17. Retrieved from http://connection.ebscohost.com/c/articles/9502160586/diversity-management-training-managers-cultural-competence-within-organization

Miller, M. R., Jun, H., Herrera, F., Yu Villa, J., Welch, G., & Bailenson, J. N. (2019). Social interaction in augmented reality. *PLOS ONE*, *14*(5), 216–290.

https://doi.org/10.1371/journal.pone.0216290

Molina, B. (2013). Obama seeks research into violent video games. Retrieved December 12, 2018, from https://eu.usatoday.com/story/tech/gaming/2013/01/16/obama-gun-violence-video-games/1839879/

Molinsky, A. (2013). *Global dexterity : how to adapt your behavior across cultures without losing yourself in the process*. Harvard Business Review Press .

Montoya, R. M., Horton, R. S., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, *25*(6), 889–922. https://doi.org/10.1177/0265407508096700

Morrissette, J. (2017). Glory to Arstotzka: Morality, Rationality, and the Iron Cage of Bureaucracy in Papers, Please. *The International Journal of Computer Game Research*, *17*(1). Retrieved from http://gamestudies.org/1701/articles/morrissette

Mortara, M., Catalano, C. E., Bellotti, F., Fiucci, G., Houry-Panchetti, M., & Petridis, P. (2014). Learning cultural heritage by serious games. *Journal of Cultural Heritage*, *15*(3), 318–325. https://doi.org/10.1016/j.culher.2013.04.004

Muller, W. (2006). The Contribution of "Cultural Literacy" to the "Globally Engaged Curriculum" and the "Globally Engaged Citizen." *The Social Educator*, *24*(2), 13–15. Retrieved from https://research-repository.griffith.edu.au/handle/10072/13561

Mullican, J. S. (1991). Cultural Literacy: Whose Culture? Whose Literacy? *English Education*, *23*, 244–250. https://doi.org/10.2307/40172768

Near, C. E. (2013). Selling Gender: Associations of Box Art Representation of Female Characters With Sales for Teen- and Mature-rated Video Games. *Sex Roles*, *68*(3–4), 252–269. https://doi.org/10.1007/s11199-012-0231-6

New Vision for Education: Fostering Social and Emotional Learning through Technology. (2016). Retrieved from http://www3.weforum.org/docs/WEF_New_Vision_for_Education.pdf

Neys, J., & Jansz, J. (2010). Political Internet games: Engaging an audience. *European*

Journal of Communication, *25*(3), 227–241. https://doi.org/10.1177/0267323110373456

Nichols, H. (2017). How video games affect the brain. Retrieved July 25, 2019, from https://www.medicalnewstoday.com/articles/318345.php

Nino, M., & Evans, M. A. (2015). Fostering 21st-Century Skills in Constructivist Engineering Classrooms with Digital Game-Based Learning. *Revista Iberoamericana de Tecnologias Del Aprendizaje*. https://doi.org/10.1109/RITA.2015.2452673

O'keefe, D. J. (2002). *Persuasion: Theory and research* (second). Thousand Oaks, CA: Sage. Retrieved from http://www.dokeefe.net/pub/OKeefe08IEC-persuasion.pdf

Oei, A. C., & Patterson, M. D. (2013). Enhancing cognition with video games: a multiple game training study. *PloS One*, *8*(3), e58546. https://doi.org/10.1371/journal.pone.0058546

Oxford Dictionaries. (n.d.). Retrieved May 9, 2018, from https://en.oxforddictionaries.com/definition/cultural_literacy

Oxford Economics. (2012). *Global Talent 2021. How the new geography of talent will transform human resource strategies. Executive summary*. Retrieved from https://www.oxfordeconomics.com/Media/Default/Thought Leadership/global-talent-2021.pdf

P21 Framework for 21st Century Learning 21st Century Student Outcomes and Support Systems Framework for 21st Century Learning. (2016). Retrieved from http://www.p21.org/storage/documents/docs/P21_framework_0816.pdf

Palaus, M., Marron, E. M., Viejo-Sobera, R., & Redolar-Ripoll, D. (2017). Neural Basis of Video Gaming: A Systematic Review. *Frontiers in Human Neuroscience*, *11*, 248. https://doi.org/10.3389/fnhum.2017.00248

Pandey, I. P., Pandey, L., & Shreshtha, A. (2007). Transcultural Literacies of Gaming. In *Gaming Lives in the Twenty-First Century* (pp. 37–51). New York: Palgrave Macmillan US. https://doi.org/10.1057/9780230601765_3

Parungao, R. (n.d.). Student Robert Parungao finds video games rife with stereotypes | Arts Undergraduate Students. Retrieved August 29, 2018, from https://students.arts.ubc.ca/student-robert-parungao-finds-video-games-rife-with-stereotypes/

Passmore, C. J., Yates, R., Birk, M. V., & Mandryk, R. L. (2017). Racial Diversity in Indie Games: Patterns, Challenges, and Opportunities. In *Extended Abstracts Publication of the Annual Symposium on Computer-Human Interaction in Play - CHI PLAY '17 Extended Abstracts* (pp. 137–151). New York, New York, USA: ACM Press. https://doi.org/10.1145/3130859.3131438

Patel, M. (2012). Seven lessons learned about social impact games - Knight Foundation. Retrieved January 6, 2019, from https://knightfoundation.org/articles/seven-lessons-knight-learned-about-social-impact-games

Peck, T. C., Seinfeld, S., Aglioti, S. M., & Slater, M. (2013). Putting yourself in the skin of a black avatar reduces implicit racial bias. *Consciousness and Cognition*, *22*(3), 779–787. https://doi.org/10.1016/j.concog.2013.04.016

Peiró-Velert, C., Valencia-Peris, A., González, L. M., García-Massó, X., Serra-Añó, P., & Devís-Devís, J. (2014). Screen Media Usage, Sleep Time and Academic Performance in Adolescents: Clustering a Self-Organizing Maps Analysis. *PLoS ONE*, *9*(6), e99478. https://doi.org/10.1371/journal.pone.0099478

Peng, W., Lee, M., & Heeter, C. (2010). The Effects of a Serious Game on Role-Taking and Willingness to Help. *Journal of Communication I*, (60), 723–742. https://doi.org/10.1111/j.1460-2466.2010.01511.x

Penix-Tadsen, P. (2013). LATIN AMERICAN LUDOLOGY. Why We Should Take Video Games Seriously (and When We Shouldn't). *Latin American Research Review*, *48*(1), 176–190. Retrieved from https://lasa.international.pitt.edu/LARR/prot/fulltext/vol48no1/48-1_174-190_penix-tadsen.pdf

Petkov, M., Rogers, G. E. (2011). Using Gaming to Motivate Today's Technology-

Dependent Students. *Journal of STEM Teacher Education*, *48*(1), 7–12. Retrieved from https://eric.ed.gov/?id=EJ952041

Pinker, S. (2011). *The better angels of our nature : why violence has declined*. Viking.

Pirc, J. (2017). *GenZ and Gaming – Who's Playing What?* Retrieved from http://blog.lab42.com/genz-gaming-whos-playing-what/

Polestina, K. (2009). Cultural Literacy. In *The Handbook of Sustainability Literacy*. University of Brighton. Retrieved from http://arts.brighton.ac.uk/stibbe-handbook-of-sustainability/chapters/cultural-literacy

Polistina, K. (2009). Cultural Literacy: Understanding and respect for the cultural aspects of sustainability. In S. A. Villiers-Stuart P. (Ed.), *The handbook of sustainability literacy: Skills for a changing world* (multimedia version). Oxford: Green Books. Retrieved from http://arts.brighton.ac.uk/__data/assets/pdf_file/0006/5982/Cultural-Literacy.pdf

Pope, L. (2013). Games by Lucas Pope. Retrieved November 15, 2018, from http://dukope.com/

Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon*, *9*(5). Retrieved from https://www.marcprensky.com/writing/Prensky - Digital Natives, Digital Immigrants - Part1.pdf

Prensky, M. (2006). *"Don't bother me Mom, I'm learning!"* (1st ed.). Paragon House.

Prensky, M. (2007). *Digital game-based learning*. New York: McGraw-HIll: Paragon House.

Price, L., & Snider, M. (2018). Video game addiction is a mental health disorder, WHO says. Retrieved December 12, 2018, from https://eu.usatoday.com/story/tech/nation-now/2018/06/18/gaming-disorder-who-classifies-video-game-addiction-health-disorder/709574002/

Primack, B. A., Carroll, M. V., McNamara, M., Klem, M. Lou, King, B., Rich, M., … Nayak, S. (2012). Role of Video Games in Improving Health-Related Outcomes: A

Systematic Review. *American Journal of Preventive Medicine*, *42*(6), 630–638. https://doi.org/10.1016/J.AMEPRE.2012.02.023

Provenzo, Jr., E. F. (1991). *Video Kids*. Cambridge, MA and London, England: Harvard University Press. https://doi.org/10.4159/harvard.9780674422483

Przybylski, A. K., Weinstein, N., & Murayama, K. (2017). Internet Gaming Disorder: Investigating the Clinical Relevance of a New Phenomenon. *American Journal of Psychiatry*, *174*(3), 230–236. https://doi.org/10.1176/appi.ajp.2016.16020224

Qian, M., & Clark, K. R. (2016). Game-based Learning and 21st century skills: A review of recent research. *Computers in Human Behavior*, *63*, 50–58. https://doi.org/10.1016/J.CHB.2016.05.023

Rabin, S. (2010). *Introduction to Game Development*. Course Technology Cengage Learning.

Raessens, J. F. F. (2010). A Taste of Life as a Refugee: How Serious Games Frame Refugee Issues. In H.-L. Skartveit & K. J. Goodnow (Eds.), *Changes in museum practice: new media, refugees and participation* (pp. 94–105). Berghahn Books.

Ralph, P., & Monu, K. (2015). Toward a Unified Theory of Digital Games. *The Computer Games Journal*, *4*(1–2), 81–100. https://doi.org/10.1007/s40869-015-0007-7

Ramírez, S.U., Riera Forteza, B., Ortego Hernando J.L., Gibert Martorell, S. (2002). El rol de la figura femenina en los videojuegos. *Edutec: Revista Electrónica de Tecnología Educativa*, (1–12). Retrieved from https://dialnet.unirioja.es/servlet/articulo?codigo=290741

Rani Molla. (2017). Millennials have a Netflix account. Gen Z is playing video games. - Recode. Retrieved July 31, 2018, from https://www.recode.net/2017/7/17/15961370/millennials-netflix-account-gen-z-video-games-mobile-phone-nielsen

Razmak, J., & Bé Langer, C. H. (2016). Interdisciplinary Approach: A Lever to Business Innovation. *International Journal of Higher Education*, *5*(2).

https://doi.org/10.5430/ijhe.v5n2p173

Rehbein, F., Psych, G., Kleimann, M., Mediasci, G., & Mößle, T. (2010). Prevalence and Risk Factors of Video Game Dependency in Adolescence: Results of a German Nationwide Survey. *Cyberpsychology, Behavior, and Social Networking*, *13*(3), 269–277. https://doi.org/10.1089/cyber.2009.0227

Rexeisen, R. J. (1984). Theory Development in Perspective: Exposing the Cultural Bias. In Thomas C. Kinnear (Ed.), *NA - Advances in Consumer Research* (Vol. NA-11, pp. 329–332). Provo, UT: Association for Consumer Research. Retrieved from http://www.acrwebsite.org/search/view-conference-proceedings.aspx?Id=6268

Rieber, L. P. (1996). Seriously Considering Play: Designing interactive learning environments based on the blending of microworlds, simulations, and games. *Educational Technology Research & Developmen*, *44*(2), 43–58. Retrieved from http://lrieber.coe.uga.edu/play.html

Riessman, C. K. (2008). *Narrative methods for the human sciences*. Sage Publications.

Robinson, T., Callister, M., Clark, B., & Phillips, J. (2009). Violence, Sexuality, and Gender Stereotyping: A Content Analysis of Official Video Game Web Sites. Retrieved from http://academic.csuohio.edu/kneuendorf/c63311/Robinsonetal09.pdf

Romero, M., Usart, M., & Ott, M. (2015). Can Serious Games Contribute to Developing and Sustaining 21st Century Skills? *Games and Culture*, *10*(2), 148–177. https://doi.org/10.1177/1555412014548919

Romero, Margarida, & Gebera, O. T. (2012). Serious Games para el desarrollo de las competencias del siglo XXI Serious Games to Develop 21st Century Skills. *RED. Revista de Educación a Distancia*, (34), 1–22.

Romero, Margarida, Usart, M., & Ott, M. (2015). Can serious games contribute to developing and sustaining 21st century skills? *Games and Culture*. https://doi.org/10.1177/1555412014548919

Rosas, R., Nussbaum, M., Cumsille, P., Marianov, V., Correa, M., Flores, P., … Salinas, M. (2003). Beyond Nintendo: design and assessment of educational video games for

first and second grade students. *Computers & Education*, *40*(1), 71–94. https://doi.org/10.1016/S0360-1315(02)00099-4

Rosen, R., & Digh, P. (2001). Developing Globally Literate Leaders. A landmark study reveals that global success depends on leadership skills and multicultural experience at all levels. *Training & Development*, 5. Retrieved from http://www.thierryschool.be/solar-system/starship-II/artemis/8AbraTefadu.pdf

Rosen, R. H. (2000). *Global literacies: lessons on business leadership and national cultures: a landmark study of CEOs from 28 countries*. Simon & Schuster.

Rosenberg, R. S., Baughman, S. L., & Bailenson, J. N. (2013). Virtual Superheroes: Using Superpowers in Virtual Reality to Encourage Prosocial Behavior. *PLoS ONE*, *8*(1), e55003. https://doi.org/10.1371/journal.pone.0055003

Royle, K. (2008). Game-Based Learning: A Different Perspective. *Innovate: Journal of Online Education*, *4*(4). Retrieved from http://www.innovateonline.info/index.php?view=article&id=433

Ruggiero, D. (2015). The effect of a persuasive social impact game on affective learning and attitude. *Computers in Human Behavior*, *45*, 213–221. https://doi.org/10.1016/J.CHB.2014.11.062

Russoniello, C. V., Brien, K., & Parks, J. M. (2009). The effectiveness of casual video games in improving mood and decreasing stress. *Journal of CyberTherapy and Rehabilitation*, *2*(1), 53–67.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/CEPS.1999.1020

Saldaña, J. (2015). *The coding manual for qualitative researchers* (3rd edition). SAGE Publications Ltd.

Salmon, J. P., Dolan, S. M., Drake, R. S., Wilson, G. C., Klein, R. M., & Eskes, G. A. (2017). A survey of video game preferences in adults: Building better games for older adults. *Entertainment Computing*, *21*, 45–64.

https://doi.org/10.1016/J.ENTCOM.2017.04.006

Salmond, M. (2016). *Video game design : principles and practices from the ground up* (1st ed.). Fairchild Books.

Sardone, N. B., & Devlin-Scherer, R. (2010). Teacher candidate responses to digital games: 21st-century skills development. *Journal of Research on Technology in Education*. https://doi.org/10.1080/15391523.2010.10782558

Schank, R. C. (1995). *What We Learn When We Learn by Doing*. Retrieved from http://cogprints.org/637/

Schanzenbach, D. W., Nunn, R., Bauer, L., Mumford, M., & Breitwieser, A. (2016). *Seven Facts on Noncognitive Skills from Education to the Labor Market*. Retrieved from http://www.hamiltonproject.org/assets/files/seven_facts_noncognitive_skills_education_labor_market.pdf

Scharkow, M., Festl, R., Vogelgesang, J., & Quandt, T. (2015). Beyond the "core-gamer": Genre preferences and gratifications in computer games. *Computers in Human Behavior*, *44*, 293–298. https://doi.org/10.1016/J.CHB.2014.11.020

Scharrer, E. (2005). Hypermasculinity, Aggression, and Television Violence: An Experiment. *Media Psychology*, *7*(4), 353–376. https://doi.org/10.1207/S1532785XMEP0704_3

Schell, J. (2008). *The art of game design: a book of lenses*. Elsevier/Morgan Kaufmann.

Schott, G. R., & Horrell, K. R. (2000). Girl Gamers and their Relationship with the Gaming Culture. *Convergence: The International Journal of Research into New Media Technologies*, *6*(4), 36–53. https://doi.org/10.1177/135485650000600404

Schweizer, B. (2009). Cultural Literacy: Is It Time to Revisit the Debate? *Thought&Action*, 51–56. Retrieved from https://eric.ed.gov/?id=EJ930461

Segal N., Kancewicz-Hoffman N., L. U. (2013). *Cultural Literacy in Europe today*. Retrieved from

https://www.unilu.ch/fileadmin/fakultaeten/ksf/institute/kuwifo/dok/cultural-literacy_esf-policy-briefing.pdf

Shen, C., Wang, H., Ritterrfild, U. (2009). Serious Games and Seriously Fun Games: Can They Be One and the Same? In V. P. Ritterfeld,U., Cody, m. (Ed.), *Serious Games Mechanisms and Effects* (pp. 70–84). Routledge. https://doi.org/10.4324/9780203891650-12

Sherry, J. (2001). The effects of violent video games on aggression.. *Human Communication Research*, *27*(3), 409–431. https://doi.org/10.1111/j.1468-2958.2001.tb00787.x

Shrestha, L. (2006). *The Changing Demographic Profile of the United States*. Retrieved from https://usa.usembassy.de/etexts/soc/crs_demographics050506.pdf

Simon, B. (2006). Games and Culture Games and Culture Beyond Cyberspatial Flaneurie : On the Analytic Potential of Living With Digital Games. *Games and Culture* , *1*(62), 62–67. https://doi.org/10.1177/1555412005281789

Šisler, V. (2008). Digital Arabs: Representation in video games. *European Journal of Cultural Studies*, *11*(2), 203–220. https://doi.org/10.1177/1367549407088333

Smith, E., & Deitsch, E. (2007). Lost (and Found) in Translation: Game Localization, Cultural Models, and Critical Literacy. In *Gaming Lives in the Twenty-First Century* (pp. 53–70). New York: Palgrave Macmillan US. https://doi.org/10.1057/9780230601765_4

Smuts, A. (2005). Are Video Games Art? *Comtemporary Aesthtics*. Retrieved from https://www.contempaesthetics.org/newvolume/pages/article.php?articleID=299

Sou, G. (2018). Trivial pursuits? Serious (video) games and the media representation of refugees. *Third World Quarterly*, *39*(3), 510–526. https://doi.org/10.1080/01436597.2017.1401923

Spar, B., & Dye, C. (2018). *2018 Workplace Learning Report The Rise and Responsibility of Talent Development in the New Labor Market*. Retrieved from https://learning.linkedin.com/content/dam/me/learning/en-us/pdfs/linkedin-learning-

workplace-learning-report-2018.pdf

Spires, H. (2008). 21st Century Skills and Serious Games: Preparing the N Generation. In L. Annetta (Ed.), *Serious educational games: From Theory to Practice* (pp. 13–23). Brill | Sense. Retrieved from https://www.researchgate.net/publication/309547229

Spivak, G. C. (1999). *A critique of postcolonial reason : toward a history of the vanishing present*. Harvard University Press.

Squire, K. (2006). From Content to Context: Videogames as Designed Experience. *Educational Researcher*, *35*(8), 19–29. Retrieved from https://sashabarab.org/syllabi/games_learning/squire_edres.pdf

Stermer, S. P., & Burkley, M. (2015). SeX-Box: Exposure to sexist video games predicts benevolent sexism. *Psychology of Popular Media Culture*, *4*(1), 47–55. https://doi.org/10.1037/a0028397

Stockdale, L., & Coyne, S. M. (2018). Video game addiction in emerging adulthood: Cross-sectional evidence of pathology in video game addicts as compared to matched healthy controls. *Journal of Affective Disorders*, *225*. https://doi.org/10.1016/j.jad.2017.08.045

Stokes, B., Dols, S., & Hill, A. (2018). *Cities Remix a Playful Platform: Prominent Experiments to Embed Pokémon GO, from Open Streets to Neighborhood Libraries*. Washington, DC. Retrieved from https://playfulcity.net/go/pokemon-report/download-report/

Strauss, V. (2017). The surprising thing Google learned about its employees — and what it means for today's students. Retrieved January 6, 2018, from https://www.washingtonpost.com/news/answer-sheet/wp/2017/12/20/the-surprising-thing-google-learned-about-its-employees-and-what-it-means-for-todays-students/?utm_term=.fdc1ac1cc2ed

Subrahmanyam, K., Smahel, D., & Greenfield, P. (2006). Connecting developmental constructions to the internet: Identity presentation and sexual exploration in online teen chat rooms. *Developmental Psychology*, *42*(3), 395–406.

https://doi.org/10.1037/0012-1649.42.3.395

Swain, C. (2007). Designing Games to Effect Social Change. In *Proceedings of DiGRA 2007 Conference* (pp. 805–809). Retrieved from http://homes.lmc.gatech.edu/~cpearce3/DiGRA07/Proceedings/107.pdf

Swain E. (2014). Choice and Consequence in "Papers, Please." Retrieved October 26, 2018, from https://www.popmatters.com/183289-papers-please-morality-2495645423.html

Takeuchi, L. M., & Vaala, S. (2014). *LeveL up Learning: a nationaL survey on teaching with digitaL games*. New York. Retrieved from https://www.joanganzcooneycenter.org/wp-content/uploads/2014/10/jgcc_leveluplearning_final.pdf

Tashakkori, A., & Teddlie, C. (2010). *Sage handbook of mixed methods in social and behavioral research* (2nd edition). SAGE Publications. Retrieved from https://us.sagepub.com/en-us/nam/sage-handbook-of-mixed-methods-in-social-behavioral-research/book233405

Tayler, T. (2003). Multiple Pleasures: Women and Online Gaming. *Convergence*, *9*(1), 21–46.

Taylor, B., & Francis, K. (2013). *Qualitative research in the health sciences : methodologies, methods, and processes*. Routledge.

Taylor, J. E., Filipski, M. J., Alloush, M., Gupta, A., Rojas Valdes, R. I., & Gonzalez-Estrada, E. (2016). Economic impact of refugees. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(27), 7449–7453. https://doi.org/10.1073/pnas.1604566113

The Hangzhou Declaration Placing Culture at the Heart of Sustainable Development Policies. (2013). Retrieved from http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/CLT/images/FinalHangzhouDeclaration20130517.pdf

Thiagarajan, S. (1998). The Myths and Realities of Simulations in Performance

Technology. *Educational Technology*. Educational Technology Publications, Inc. https://doi.org/10.2307/44428481

Todd, A. R., & Galinsky, A. D. (2014). Perspective-Taking as a Strategy for Improving Intergroup Relations: Evidence, Mechanisms, and Qualifications. *Social and Personality Psychology Compass*, *8*(7), 374–387. https://doi.org/10.1111/spc3.12116

Torres, R. J. (2009). *Learning on a 21st century platform: Gamestar Mechanic as a means to game design and systems-thinking skills within a nodal ecology.* New York University. Retrieved from https://www.learntechlib.org/p/122704/

Toscano, A. A. (2011). Enacting culture in gaming: A video gamer's literacy experiences and practices. *Current Issues in Education*, *14*(1). Retrieved from http://cie.asu.edu/

Totilo, S. (2013). *Anita Sarkeesian's First "Tropes vs. Women in Games" Video May Come Out Next Month, But Her Tumblr's Live Now*. Kotaku. Retrieved from http://kotaku.com/5980335/anita-sarkeesians-first-tropes-vs-women-in-games-video-may-come-out-next-month-but-her-tumblrs-live-now

Tucker, M. F., Bonial, R., Vanhove, A., & Kedharnath, U. (2014). Leading across cultures in the human age: an empirical investigation of intercultural competency among global leaders. *SpringerPlus*, *3*(1), 127. https://doi.org/10.1186/2193-1801-3-127

UNESCO/Dov Lynch. (2011). Irina Bokova calls for cultural literacy at the Yaroslavl Global Policy Forum | United Nations Educational, Scientific and Cultural Organization. Retrieved May 18, 2018, from http://www.unesco.org/new/en/media-services/single-view/news/irina_bokova_calls_for_cultural_literacy_at_the_yaroslavl_gl/

UNESCO. (1947). *Report of the Director-General on the activities of the Organisation in 1947*. Mexico City. Retrieved from http://unesdoc.unesco.org/images/0021/002148/214807eb.pdf

UNESCO. (2006). *Education for All. Global Monitoring Report.* Paris. Retrieved from

http://unesdoc.unesco.org/images/0014/001442/144270e.pdf

UNESCO. (2015). *Global Citizenship Education: an emerging perspective*. Retrieved from http://unesdoc.unesco.org/Ulis/cgi-bin/ulis.pl?catno=231870&set=005802C039_0_337&gp=1&lin=1&ll=1

UNESCO. (2017). *Literacy Rates Continue to Rise from One Generation to the Next Global literacy trends today*. Retrieved from http://on.unesco.org/literacy-map.

United Nations General Assembly. (1951). Convention relating to the status of refugees. Geneva, Switzerland: United Nations. Retrieved from www.unhcr.org

United Nations Secretary-General. (2012). Global Education First Initiative. New York, NY 10017 USA: un.org/sg. Retrieved from https://www.gcedclearinghouse.org/sites/default/files/resources/%5BENG%5D Global Education First Initiative_0.pdf

Uttal, D. H., Meadow, N. G., Tipton, E., Hand, L. L., Alden, A. R., Warren, C., & Newcombe, N. S. (2013). The malleability of spatial skills: A meta-analysis of training studies. *Psychological Bulletin*, *139*(2), 352–402. https://doi.org/10.1037/a0028446

Vahlo, J., Kaakinen, J. K., Holm, S. K., & Koponen, A. (2017). Digital Game Dynamics Preferences and Player Types. *Journal of Computer-Mediated Communication*, *22*(2), 88–103. https://doi.org/10.1111/jcc4.12181

van ’t Riet, J., Meeuwes, A. C., van der Voorden, L., & Jansz, J. (2018). Investigating the Effects of a Persuasive Digital Game on Immersion, Identification, and Willingness to Help. *Basic and Applied Social Psychology*, *40*(4), 180–194. https://doi.org/10.1080/01973533.2018.1459301

van Staaldunien, J., & de Freitas, S. (2011). A game-based learning framework linking design and learning outcomes. In M. S. Khine (Ed.), *Learning to play : exploring the future of education with video games* (pp. 29–54). New York: Peter Lang. Retrieved from https://espace.curtin.edu.au/handle/20.500.11937/26899

Vandewater, E. A., Shim, M., & Caplovitz, A. G. (2004). Linking obesity and activity

level with children's television and video game use. *Journal of Adolescence*, *27*(1), 71–85. https://doi.org/10.1016/J.ADOLESCENCE.2003.10.003

Velez, J. A., Mahood, C., Ewoldsen, D. R., & Moyer-Gusé, E. (2014). Ingroup Versus Outgroup Conflict in the Context of Violent Video Game Play. *Communication Research*, *41*(5), 607–626. https://doi.org/10.1177/0093650212456202

Wagner, T. (2008). *The global achievement gap: why even our best schools don't teach the new survival skills our children need--and what we can do about it*. Basic Books.

Wei, H.-T., Chen, M.-H., Huang, P.-C., & Bai, Y.-M. (2012). The association between online gaming, social phobia, and depression: an internet survey. *BMC Psychiatry*, *12*(1), 92. https://doi.org/10.1186/1471-244X-12-92

Wells, J. (2016). From Project Syria to That Dragon, Cancer: the rise of empathy video games. Retrieved February 12, 2019, from https://www.telegraph.co.uk/men/the-filter/the-surprising-rise-of-empathy-video-games/

White, B. (2018). The Difference Between "Expat" and "Immigrant." Retrieved January 16, 2019, from https://passionpassport.com/the-difference-between-expat-and-immigrant/

Whitehead, D. (2013). Papers, Please review. Law and border. Retrieved November 13, 2018, from https://www.eurogamer.net/articles/2013-08-09-papers-please-review

Williams, D., Martins, N., Consalvo, M., & Ivory, J. D. (2009). The virtual census: representations of gender, race and age in video games. *New Media & Society*, *11*(5), 815–834. https://doi.org/10.1177/1461444809105354

Williams, K. D. (2010). The Effects of Homophily, Identification, and Violent Video Games on Players. *Mass Communication and Society*, *14*(1), 3–24. https://doi.org/10.1080/15205430903359701

Wilson, H. B. (1974). Cultural Literacy Laboratory. *McGill Journal of Education / Revue Des Sciences de l'éducation de McGill*, *9*(001). Retrieved from http://mje.mcgill.ca/article/view/6952

Wilson, T. D. (2002). *Strangers to ourselves : discovering the adaptive unconscious*. Belknap Press of Harvard University Press.

Winn, B. M. (2007). The Design , Play , and Experience Framework. In Richard E. Ferdig (Ed.), *Handbook of Research on Effective Electronic Gaming in Education* (pp. 1010–1024). IGI Global. Retrieved from https://www.semanticscholar.org/paper/Chapter-LVIII-The-Design-%2C-Play-%2C-and-Experience-Winn/3b8d5c4ba561e1d241af4ee98d7c7bcacb1ddf01

Wohn, D. Y. (2011). Gender and Race Representation in Casual Games. *Sex Roles*, *65*(3–4), 198–207. https://doi.org/10.1007/s11199-011-0007-4

Wolf, M. J. P. (2016). *Video games and gaming culture: critical concepts in media and cultural studies* (first). New York, NY 10017 USA: Routledge.

World Economic Forum. (2016). *The Future of Jobs Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

Zammitto, V. L. (2010). *Gamers' personality and their gaming preferences*. SIMON FRASER UNIVERSITY. Retrieved from http://summit.sfu.ca/item/11349

Zelinski, E. M., & Reyes, R. (2009). Cognitive benefits of computer games for older adults. *Gerontechnology : International Journal on the Fundamental Aspects of Technology to Serve the Ageing Society*, *8*(4), 220–235. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/25126043

Zhang, X. (2012). E-learning and Intercultural Literacy. *International Journal of Humanities and Social Science*, *2*(7), 163–173. Retrieved from http://www.ijhssnet.com/journals/Vol_2_No_7_April_2012/18.pdf

Zielke, M. A., Evans, M. J., Dufour, F., Christopher, T. V, Donahue, J. K., Johnson, P., … Flores, R. (2009). Serious Games for Immersive Cultural Training: Creating a Living World. *IEEE Computer Graphics and Applications*, *March/April*, 49–60. Retrieved from https://www.utdallas.edu/~maz031000/res/IEEE_Article.pdf

Appendices

Appendix 1

Materials for Study 1 described in Chapter Four

Pre-test. Video games and intercultural communication, immigrant issues, empathy

You can answer in any language you are comfortable with. Відповідайте мовою якою, вам зручно.

1.How old are you?/Скільки вам років?

2.Are you/Ваша стать

- male/чоловік
- female/жінка
- other/інше

3.Your nationality?/Ваша національність

4.Refugees and immigrants are responsible for the social tension that exists now in the world and in the EU/Біженці та мігранті винні у соціальній напрузі, що існує зараз у світі та Європі

- ☐ All of it/Повністю винні
- ☐ A lot/Винні
- ☐ Some/Дещо винні
- ☐ Just a little/Трохи є
- ☐ None at all/Невинні

5.I know the reasons why refugee and immigrants flee from their motherland/Я знаю причини, з яких біженці та мігранти переїжджають жити в інші країни

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Дещо знаю
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Практично не знаю
- ☐ Strongly disagree/Не знаю нічого

6.Refugee/immigrants don't integrate into their new societies, they stay with people similar to them/Біженці та мігранти не інтегруються в суспільство, вони живуть з людьми, подібними до них

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні

- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

7.Refugees and migration are big problem in the world and in the EU/Біженці та міграція є великими проблемами в світі та Європі зараз

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

8.I don’t know what to expect form refugee/immigrants/Я не знаю, чого чекати від біженця чи мігранта

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

9.My lack of knowledge prevents me from feeling comfortable next to refugee and immigrants/Недостатня інформованість заважає мені почуватися комфортно біля біженців та мігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

10.Refugees and immigrants should stay where they were born/Біженці та мігранти повинні залишатися жити там, де вони народилися

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

11.Refugees/immigrants steal our jobs/Los refugiados/Біженці та мігранти займають наші робочі місця

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти

- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

12.Politicians care more about refugees than about their citizens/ Політики більше опікуються біженцями, ніж своїми власними громадянами.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

13.Over the past few years, refugees/migrants have gotten more economically than they deserve/Протягом останніх років біженці та мігранти отримали більше економічних благ, ніж вони заслуговують

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

14.Refugee and immigrants have the same right as I do/Біженці та мігранти мають такі ж права, як і я

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

15.I feel sympathy for refugee and immigrants/Я відчуваю співчуття до біженців / імігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

16.I would help refugees and migrants to integrate into the society/Я б залюбки допомагав біженцім та імігрантам інтегруватися у суспільство

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

17.I respect people regardless of where they are from/Я поважаю людей, незалежно від того, звідки віни

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

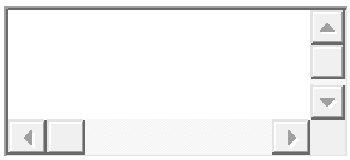
18.I would live next door to a refugee or immigrant family/ Я б жив поруч із сім'єю біженців або імігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

19.Are you

- ☐ gamer
- ☐ non-gamer
- ☐ video games guru
- ☐ casual player

20.Have you played serious games or educational games or games for change, games for social and political awareness?/Ви коли небудь грали у ігри, які розроблені із метою просвіти про соціальні або політичні теми? Якщо грали, то в які?



Thank you for participating in this study.

Appendix 2

Materials for Study 2 described in Chapter Four

Post-test. Video games and intercultural communication, immigrant issues, empathy

You can answer in any language you are comfortable with. Відповідайте мовою якою, вам зручно

1.What game did you play?/В яку гру ви грали?

- ☐ Against all odds
- ☐ Papers, please
- ☐ Survival

2.Why have you chosen this game to play?/Чому ви вибраили саме цю гру?

3.I've learnt something new/Я дізнався щось нове про життя біжинців та імігрантів.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

4.The content of the game has a strong message/У гри сильний месседж.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

5.I like this way of learning about refugee and immigrant issues/ Мені сподобалося грати в відео гру і дізнаватися нове на цю тему

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

6.I like experiencing the life of refugee and migrant/Мені сподобалось подивитися на світ очима біженця

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

7.I like how the topic is presented in the game/Мені сподобалось, як тема представлена у грі.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

8.The game made me think about the problems of refugees in the world and in my country? Гра змусила мене задуматися над проблемами, які існують зі іммігрантами у моїй країні та у світі.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти

- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

9.Refugee and immigrants have the same right as I do/Біженці та мігранти мають такі ж права, як і я

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

10.Refugee/immigrants don't integrate into their new societies, they stay with people similar to them/Біженці та мігранти не інтегруються в суспільство, вони живуть з людьми, подібними до них

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

11.Refugees and migration are big problem in the world and in the EU/Біженці та міграція є великими проблемами в світі та Європі зараз

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

12.I don’t know what to expect form refugee/immigrants/Я не знаю, чого чекати від біженця чи мігранта

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

13.I would help refugees and migrants to integrate into the society/Я б залюбки допомагав біженцім та імігрантам інтегруватися у суспільство

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

14.I would live next door to a refugee or immigrant family/ Я б жив поруч із сім'єю біженців або імігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

15.I know the reasons why refugee and immigrants flee from their motherland/Я знаю причини, з яких біженці та мігранти переїжджають жити в інші країни

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Дещо знаю
- ☐ Undecided/Невпевненний як відповісти
- ☐ Disagree/Практично не знаю
- ☐ Strongly disagree/Не знаю нічого

16.Politicians care more about refugees than about their citizens/ Політики більше опікуються біженцями, ніж своїми власними громадянами.

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден

- ☐ Strongly disagree/Абсолютно не згоден

17.Over the past few years, refugees/migrants have gotten more economically than they deserve/Протягом останніх років біженці та мігранти отримали більше економічних благ, ніж вони заслуговують

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

18.I feel sympathy for refugee and immigrants/Я відчуваю співчуття до біженців / імігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

19.I respect people regardless of where they are from/Я поважаю людей, незалежно від того, звідки віни

- ☐ Strongly agree/Так, це правда

- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

20.Refugees/immigrants steal our jobs/Los refugiados/Біженці та мігранти займають наші робочі місця

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

21.Refugees and immigrants should stay where they were born/Біженці та мігранти повинні залишатися жити там, де вони народилися

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

22.My lack of knowledge prevents me from feeling comfortable next to refugee and immigrants/Недостатня інформованість заважає мені почуватися комфортно біля біженців та мігрантів

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

23.Refugees and immigrants are responsible for the social tension that exists now in the world and in the EU/Біженці та мігранті винні у соціальній напрузі, що існує зараз у світі та Європі

- ☐ All of it/Повністю винні
- ☐ A lot/Винні
- ☐ Some/Дещо винні
- ☐ Just a little/Трохи є
- ☐ None at all/Невинні

24.I would like to attend a special Foundations of Intercultural Communication course to become more skilled in communicating with people from different cultures/Я би хотів дізнатися більше, як ефективно взаємодіяти із представниками інших культур, і прослухати курс "Основи міжкультурноі коммунікації"

- ☐ Strongly agree/Так, це правда

- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

25.I would somehow help refugees and migrants as a volunteer/Я би домопогам як волентер біженцям або імігрантам

- ☐ Strongly agree/Так, це правда
- ☐ Agree/Більше так, чим ні
- ☐ Undecided/Невпевнений як відповісти
- ☐ Disagree/Не згоден
- ☐ Strongly disagree/Абсолютно не згоден

Thank you for participating in this experiment.

Appendix 3

Materials for study described in Chapter Five

Video games questionnaire

You could answer in English, in Spanish or in Ukrainian. Se puede responder en Ingles o en Castellano. Ви можете відповідати українською або англійською мовами.

1.Are you male or female? / ¿Eres hombre o mujer? / Ви чоловік чи жінка?

- ☐ Male
- ☐ Female

2.What is your age? / ¿Cuál es tu edad? / Скільки Вам років?

- ☐ 16-18
- ☐ 19-21
- ☐ 22-24
- ☐ 25-27
- ☐ 27-29
- ☐ 30+

3.What is your nationality? / Хто ви за національністю?

4.Based on the description of a gamer, would you describe yourself as a gamer? / Basándote en la descripción ¿te describirías como un "gamer"? / Відштовхуючись від визначення, Ви вважаете себе геймером?

A gamer is a person who owns at least one games console or gaming device and spends 5+ hours a week to gaming Un gamer es una persona que posee al menos un dispositivo de videojuegos, y que dedica 5+ horas semanales a jugar. Геймер це людина, яка володіє як мінімум одним дивайсом для відео игр, і яка проводить 5+ годин на тиждень граючи у відео ігри.

- I am a gamer
- I am a non-gamer
- I am a videogame guru

5.How would you describe videogames in general with just few words? / ¿Cómo describirías los videojuegos en general con unas pocas palabras? / Як би Ви описали відео ігри декількома словами?

Video games are... Los videojuegos son... Відео ігра це...

6.How do you play videogames? (check as many as you need) / ¿Cómo juegas a videojuegos? (puedes seleccionar multiples opciones) / Як Ви зазвичай граєте у відео ігри? *(можна вибирати декілька відповідей)*

- ☐ Consoles like PS3/PS4, XBOX 360/ONE, WII, etc
- ☐ PC/Mac stations
- ☐ Mobile phones/Tablets
- ☐ Arcade (coin-operated entertainment machine)
- ☐ Handheld game consoles like Nintendo 3DS, PlayStation Vita, etc

7.Do you play alone or with friends? / ¿Juegas solo o con amigos? / Ви граєте один чи з друзями?

- ○ Mostly alone
- ○ Mostly with friends
- ○ Both

8.How did you start playing video games? Who or what motivated you? (friends, advertisements, etc) / ¿Cómo empezaste a jugar a videojuegos? ¿Quién o qué te motivó? (amigos, publicidad, propio interés, etc) / Як Ви почали грати у відео ігри? Хто або що мотивувало Вас? (друзі, батьки, реклами, власна цікавість, тощо)

9.Select the main reason you think YOU play computer games. / Señala la razón principal por la que piensas que TÚ juegas a videojuego /Виберіть основну причину чому ви граєте у відео ігри

Select only one from this list:

☐ Entertainment and fun

☐ Challenge

☐ Camaraderie and connectedness - “The main thing that drives me is teamwork... I don’t like free-for-all… I want team-based games. Teamwork [is] the only thing I want online.”

☐ Emotional satisfaction - “In short, we do it because it’s fun and it feels good.”

☐ Alternative to negative behaviors – “They keep me occupied and out of trouble.”

☐ Escapism – “With video games, you can escape the perpetual boredom of the real world and become anything you want to be.”

☐ Practice or learn life skills – “I…organize, prioritize, create context, make friends, lead strangers, make hard choices, feel empathy, and give mercy”

☐ Stress relief (displacement or delay of responsibility in real life)

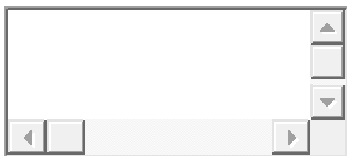
☐ Difficulty making friends (in real life)

☐ other

10.Can you write to your Top 3 video game genres? / ¿Puedes escribir tus 3 favoritos géneros de videojuegos? / Які Ваші 3 улюблені жанри відео ігр?

For example: Action (like Halo, Call of Duty) Simulation (like The Sims, Spore) Driving (like Forza, Test Drive) Puzzle/Card (like Tetris, Poker) Role Playing (like Mass Effect, World of Warcraft, Diablo) Adventure (like The Walking Dead, Heavy Rain) Strategy (like Civilization, Warcraft) Sports (like Madden NFL, NBA 2k11) Fighting

(like Soul Calibur, WWE) Music/Dance (like Guitar Hero, Dance Dance Revolution) Educational (like Democracy, Math Blaster) Social Network (like Farmville, Empire & Allies) Construction (Like Minecraft) ..... or any other that you know



11.Based on your favourite genres, what attracts you to this kind of games? / Basándote en tus géneros favoritos ¿qué te atrae más a estos tipos de juegos? / Що вас приваблює у ваших улюблених відео іграх?

You can select more than one. /Можно вибирати більше, ніж одну відповідь.

- ☐ Graphics, art and animation
- ☐ User Interface
- ☐ Sound, music
- ☐ Gameplay / Game Mechanics
- ☐ Narrative/Storytelling
- ☐ Customization of characters and/or levels
- ☐ Artificial Intelligence (A.I)
- ☐ Multiplayer interaction/communication
- ☐ Cross platform features
- ☐ Following up streaming gameplays (community of gamers)
- ☐ Achievements and rewards
- ☐ other

12.What is the best game you have ever played? Why? / ¿Cuál es el mejor videojuego que has jugado? ¿Por qué? / Найкраща відео ігра в яку Ви грали? Чому?

13.Who is your favourite game protagonist? / ¿Cuál es tu personaje favorito de videojuegos? / Хто Ваш улюбленний персонаж відео ігри? Чому саме він/вона?

14.What is your most memorable moment of playing a videogame? / ¿Cuál es el momento más memorable jugando a un videojuego? / Який був самий незабутній момент коли Ви грали у відео ігру?

15.What would you like to see in videogame made just for YOU? / ¿Qué te gustaría ver en videojuegos hechos para TI? Що би Ви хотіли побачити у відео ігрі зробленній спеціально для Вас?

16.Do you think games can be educational? / ¿Piensas que los videojuegos pueden ser educativos? / Як ви вважаете, відео ігри можуть слугувати для освітніх цілей?

- ☐ Yes
- ☐ No
- ☐ Not sure

17.What influence does the playing videogames have on you? / ¿Qué influencia tiene en ti, el jugar a videojuegos? / Як впливають на Вас відео ігри?

18.If tomorrow is the end of the world, what 3 games would you save? / Si mañana fuera el fin del mundo, ¿qué 3 juegos salvarías? / Якщо завтра будет кінець світу, які 3 відео ігри Ви би врятували?

19.Finally, what you didn't know before you started playing videogames? / Finalmente, ¿ qué no sabías antes de empezar a jugar a videojuegos? / І на останок, що Ви не знали, коли починали грати у відео ігри?

Thank you for participating in this experiment.

Appendix 4

Materials for Chapter Six

The link to the recorded video demonstration the game mechanics and levels of *Chuzme*

https://upvedues-my.sharepoint.com/:v:/g/personal/amunyoz_upv_edu_es/EaoWTQYre9hKqvB38_jfXgABCd-s5GpFsxt3d2LRVqmCjQ?e=6xPRV2

Indexes

List of Figures

List of Tables

List of Pictures

List of Diagrams