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Alternative ways to engage the civil society on world problems: how a game can fight hunger

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Declaration

I, Erika Rabello Rizzo, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for any type of academic degree.

Erika Rabello Rizzo, July 1, 2020

Signature: _____

Date: _____

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Abstract

The game industry is one of the leading ones in the entertainment business. Its ability to engage people reach thousands of millions accross the world, is a great phenomenon. The expansion of the industry and its engagement levels signal that games can be used for other purposes than entertainment. Hence, this research explores how games can be used as an alternative solution to engage people in solving real world problems.

The focus of this study is on a specific case: the Free Rice game. Its purpose is to fight world hunger through a game interface which allows people to make free donations while playing. To analyse and understand the case, the research investigates whatthe players' experiences are and how they feel while playing Free Rice. To fully comprehend the case, theories from both sides are presented: game design theory and food security, hunger, poverty and structural vioence theories.

This is a qualitative methods research based on a case analysis. To collect the data, the study used an online structured survey with open ended questions to understand the players' experience on playing Free Rice. The research collected data from 23 different respondants that voluntarily play Free Rice. A mix of purposive and convinience sampling method was used to sort the participants. Purposive was necessary as the research aimed to analyze replies from a wide reange of countries as the game is played world-wide. Convinience was also used because the target group was not easily reachable as Free Rice does not offer a discussion forum in which the survey could be spread out.

The findings showed that Free Rice is mostly attractive to the participants because it offers the possibility to make free donations. The game seems to be challenging to most of the participants and it provides a learning outcome to all – mainly related to the language learning section. Overall, the players interviewed felt like their virtual efforts in the game were important in the bigger picture in the fight against hunger.

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List of Abbreviations

ARG	Alternative reality games
CESCR	Committee on Economic, Social and Cultural Rights
DES	Dietary energy supply
FAO	Food and Agriculture Organization
GDP	Gross domestic product
GTA	Grand Theft Auto
MMOG	Massively multiplayer online games
NGO	Non-governmental organization
SDG	Sustainable Development Goals
UN	United Nations
WFP	World Food Programme

1. Introduction

The virtual game industry is a giant in the entertainment segment that profits more than US\$152 billion a year (Newzoo, 2019). The size of the industry shows how much engagement power it has over the people. Even though games are mostly known as an entertainment tool, as the industry grows it brings along diversification. Different categories emerge, as games for change: games that aim beyond user's amusement, but they seek to use the player engagement to drive real social change.

This new category unveils new potential and purpose to games: the one of solving real world problems. Hence, this research aims to understand how games can contribute to promote real world impact through user engagement. Because there are too many games with serious purposes than a single research can study, the research chose to focus on a case study related to hunger and food security: the Free Rice game. In addition, it is important to highlight that when the research refers to "games" it means "virtual games" made for computer, consoles, tablets or cellphones. Hence, nor board games or real life activity games are included on this.

To analyze how Free Rice engages its players, the research aims to understand how they feel about their experience when playing the game. In addition, to comprehend the case the research presents theories that explains both ends of the project: game design theory and food security, structural violence, poverty and hunger reduction theory.

1.1. Research question

- How can games contribute to promote a real impact through user engagement on real world problems? The analysis will fall under the case Free Rice.
 - What are the main factors that contribute for user engagement in the Free Rice game?
 - What are Free Rice's real impacts?
 - How does the Free Rice game make the people feel like? Do they think they are making real a real contribution to fight hunger?

2. Background and Theory

2.1. Understanding games

This section provides the necessary theory and background to understand the different definitions of game, the mechanics used to design a game and how they result on user engagement.

2.1.1. The game industry

Games are an element present for a long time in human history. Back in 400 BC, Herodotus had already registered the use of games in the Lydian society (McGonigal, 2011). The realm was going through scarcity times and had very little food to feed its population properly. To survive the tough times, they came up with an odd, but effective solution for the problem: they were to use games to distract themselves from the hunger.

“The plan adopted against the famine was to engage in games one day so entirely as not to feel any craving for food . . . and the next day to eat and abstain from games. In this way they passed eighteen years, and along the way they invented the dice, knuckle-bones, the ball, and all the games which are common” (Herodotus, 2013, p. 182).

Nowadays, games are one of the biggest players in the entertainment industry. It is no longer exclusively for the kids and it has spread throughout all age ranges. There is an immense variety of categories and games designed to reach different tastes, ages and market shares. There are even games that its main purpose is not entertainment, but to educate or to contribute with real impact on society. Due to its engagement potential, game mechanics are studied and applied in other sectors like business to make employees more productive (Newzoo, 2017). This process of applying game design in areas not related to games is called gamification¹.

The potential can also be noticed through the industry numbers. This is an extremely lucrative field and has been growing a lot through the last years. Ever since 2012, the games industry surpassed the movies industry: for every US\$10 made by the latter, the first made US\$16 or more (Digi-capital, 2017). Even if combined the movie with the music industry, they still would not beat the revenue made by the game industry and it has been like this for almost a decade now. In addition, the highest grossing entertainment product in history was a game: Grand Theft Auto V (Econotimes, 2019).

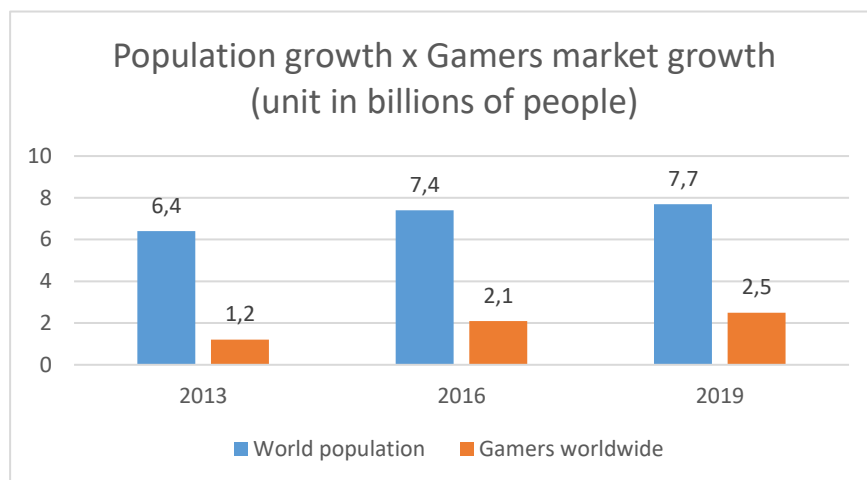
Back in 2016, the companies foresaw that by 2019 the industry would reach US\$118 billion of annual revenue (Newzoo, 2016). In 2019, the industry revenue hit US\$152 billion and it forecasts a growth rate of 9.6 % year-on-year. Among the market,

¹ The practice of making activities more like games in order to make them more interesting or enjoyable (Cambridge Dictionary, 2020).

mobile games is the segment that contributes more to the revenue – with 45% of the shares – followed by console and PC – 32% and 23% respectively (Newzoo, 2019).

Mobile constitutes the biggest share due to its portable nature. This makes the access to game easier, since people always carry it on their daily routine. The mobile games are also more accessible because they are cheaper and users can play more casually, while commuting for example. The lower price and easy access also allows it to be commercialized in a huge scale, beating the big console games (Gedigames, 2014). The sub-market has potential to grow even more, since worldwide there are 3.5 billion smartphone users, which means 45.1% of the population (Bankmycell, 2020).

When it comes to the global market, there are more than 2.5 billion gamers around the world (Wijman, 2019). This means that 32.4% of the world population play some kind of game. The number of players is also following the growth trend through the last years: it has more than doubled since 2013, when there were 1.2 billion people in this segment (Newzoo, 2016). Graphic I illustrates it:



Graphic 1. Source: Prepared by the author (me) using Newzoo reports.

Another important factor that contributed to the expansion of the industry is the diversification of the gamer profile. The stereotype is broken and games are no longer kid's or male's exclusive. In fact, in 2017 women accounted for 47% of the global players. In addition, only 22% of the global market – males and females – are under 20 years old. The main share is from 21 to 35 y.o. that represents 63% of the users (Newzoo, 2017).

Those are the main facts and data that show how strong the industry is and how much more potential for growth it has. Due to its engaging nature year by year it attracts more users to the market and the more it grows different segments expand and games are developed. Even though it is still a small segment, games for change is one of those fields

that benefits from the expansion of the industry. In the next section, this research explores the different types of games as the one mentioned above.

2.1.2. Types of games

When it comes to the game categories, there is no consensus on the industry. The references within the Game design segment and the academy are not concrete and there is no agreement on a single set of game genres or ways to categorize them (Cardoso & Sato, 2008, p. 54). In the industry, it is possible to find different classifications with some level of variation between them. Each author or designer develops their own classification based on how pertinent it is to their work. Given that, this research is not able to explore all of the game categories, focusing on the relevant categories as well. Hence, the study uses Hunter's and Werbach's (2012) classification. On their book *For the Win*, they present four main types of games:

- **Advergaming:** games designed to advertise and promote products and services. They are normally used to increase brands' consumer engagement on websites.
- **Social games:** online games that use social networks as the delivery platform and that often have a significant level of social interaction. The most common network used for those games is Facebook.
- **Massively multiplayer online games (MMOG):** games that provide an online virtual world that allow a massive base of gamers – from thousands to millions – to interact and roleplay together.
- **Serious games:** games that the main purpose is other than the entertainment. They can be used for example for skill development, education or problem solving.
 - **Games for change:** they are serious games designed to provide or reach certain social benefit.

(Hunter & Werbach, 2012, p.129-133)

Games for change is a subcategory of serious games. In the market, the latter is relatively developed and spread due to its application on business. Big corporations like Nike, Samsung and Microsoft use gamification and serious games to improve their staff productivity, motivation, results and to provide internal trainings (Fleury, Nakano, Cordeiro, 2014, p.34).

The segment that has the biggest potential to promote real impact on society and contribute to improve real world problems is games for change. However, this still a

market share less developed, but with high potential. One of the reasons for this little representativity in the industry is because its financial return is little if compared to the other categories in the industry, mainly games that focus primarily on entertainment. Due to the small returns, the development of games for change is usually linked to specific public policies and research; and mostly depends on sponsorship from institutions (Fleury, Nakano, Cordeiro, 2014, p.30).

Another relevant category is alternative reality games (ARG). According to Jane McGonigal (2011), those are anti-escapist games and they are designed to be played in the real life, even if they make use of a digital interface. The purpose of ARG is that the users invest their time and efforts on their real lives as much as they dedicate time to their virtual game's lives. Because of this characteristic, this game category has a high potential to impact and promote real change on both: personal lives and society as a whole. Along with games for a change, ARG lead a new wave in the industry in which developers see that the game technologies can be applied to make significant changes in the real world (McGonigal, 2011, p.131)

The market projections forecast growth to not only serious games applied to business or education, but to the segment as a whole. This means that the development of games that focus on social improvement will become more common. As the field grows, it reaches more players. Hence, private actors that spot financial opportunities and sustainable business model will also start to develop games for change. Another factor that contributes to the increase of games with a social improvement purposes is the use of cellphone as the main gaming platform. The devices make games more accessible, affordable and present on people's daily lives. The more the user base grows, more games are developed and it also increases the development of games for a change for those devices (Fleury, Nakano, Cordeiro, 2014, p.60).

The problem with this game category is that it is still niche oriented. If compared to MMOG segment or to the main releases of the industry – as GTA V that sold 52 million copies – it is small in size. None of the games developed for social change purposes has reached scalability or a huge amount of users yet. Even though the amount of players vary across different segments – also because of the marketing behind it – there are certain elements that are always present in games. The next section explores the different definitions and elementary mechanics on game design.

2.1.3. After all, what are games?

On this part, the study introduces the different kinds of definitions and the basic premises that are necessary for something to be considered a game. It is important to stress that there is no universal definition for games nor a common theoretical language for the game elements. Since there is no consensus, the research presents the main and most common definitions used in the industry and by game designers.

2.1.3.1. Bernard Suits

Bernard Suits is a philosopher with a strong interest in games. He created his own definition for games on his book “Grasshopper: Games, Life and Utopia” (1978):

“(…) to play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, where the rules prohibit more efficient in favor of less efficient means, and where such rules are accepted just because they make possible such activity” (Suits, 1978, p.34).

In other words, it means that games are objective-driven activities that are limited by a set of rules. The rules dictates the means and conditions allowed and restrict the possible choices and decisions that the player can make towards the goal. Lastly, the voluntary acceptance of the rules is also part of the game, because without it the activity cannot happen. Those are the four elements that must be present to constitute a game: “a goal, means to achieve the goal, rules” and what Suits calls “the lusory attitude” – the voluntary acceptance of the rules (Suits, 1978, p.36).

The game designer also presents a more concise and simple definition for what it is to play a game: “[it] is the voluntary attempt to overcome unnecessary obstacles” (Suits, 1978, p.41).

2.1.3.2. Katie Sallen e Eric Zimmerman

On their book “Rules of Play: game design fundamentals” (2004), Salen and Zimmerman make a comparative study between different game definitions in order to create their own. After analyzing eight different authors, they came up with the following theory: “A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome” (Sallen & Zimmerman, 2004, p.93).

In an in depth analysis, they defend that there are six main elements that constitute a game: system, players, artificiality, conflict, rules and quantifiable outcome. A game is

a system that contains several elements that interact and make the game whole. The players are active participants that make interactions with the system and fulfil its purpose. However, these interactions do not happen in the real world, but in an artificial structure that allow the users to have new experiences. To the game designers, there are boundaries that separates games from the real life. Conflicts are central to the structure and interactions of the game; they shape the users' relationships – by playing cooperatively or competitively. Rules are another element that shape the game; they present the limitations, dictate what is allowed and not allowed. Lastly, as a final consequence of the conflicts, a game presents a numerical score at its conclusion to measure the performance of the players (Sallen & Zimmerman, 2004, p.93).

2.1.3.3. Raph Koster

In *Theory of Fun* (2004), Raph Koster also investigate games, but he slightly diverge on from the previous authors. Differently from the others, he does not present a list of elements, but tries to grasp an understanding of what are games. To make his analysis, he also compares other existing theories and he notices that none of them involves “having fun” as essential to que equation. He also point out that the previous definitions – as Sallen's and Zimmerman's – saw games as stand-alone systems disconnected from the real world. “They all present games as if they exist within a world of their own (...) A lot of them define games as objects that aren't real” (Koster, 2004, p.34).

However, Koster disagree with that vision. According to the designer, games are linked to the real world because they are depictions of real world patterns, just like how our brain perceives reality.

“They have more in common with how our brain visualizes things than they do with how reality is actually formed. The world is full of systems that we can choose to approach as games, and by approaching them that way, we make them into games (...) Games are puzzles to solve, just like everything else we encounter in life. It is the act of solving puzzles that makes games fun” (Koster, 2004, p.34-40).

In a perspective that games are puzzles, they are seen as a tool for problem solving that we can apply in the real world. This process of solving puzzles and problems stimulate

the brain because they offer cognitive challenges to it. To Koster, games are a good teaching tool because they make things interesting to the brain by offering the certain amount of cognitive stimuli. To him, games are a fun way to learn and solving problems (Koster, 2004, p.54).

2.1.3.4. Jesse Schell

As Koster, Jesse Schell also perceives the element of fun in games and agrees with the perspective that they are a way to do problem solving. On his research with gamers to find out what they like about games, the most recurrent answer was “I like to solve problems”. When a game presents an objective, a problem is also set and it is up to the player to define how they will overcome the challenge to achieve the end goal. Problem solving is always present on games because there is no game without an objective. Hence, a game with no problem solving or objective is no game, is just an activity (Schell, 2008, p.34).

However, Schell goes further into it and investigates what constitutes the act of play and what differentiates it from work. The fundamental distinction between those two actions is how voluntary they are. People work because they have to. They must pay the bills and the rent to guarantee comfort and safety; or buy food and essential supplies for their own and their families’ survival. The less voluntary the action is, the less it feels like play. On the other hand, the more compulsory and activity is, the more it feels like work. According to Schell’s words:

“Whoever plays, plays freely. Whoever must play cannot play. (...) Play involves willful action, usually a willful action of touching or changing something. So, one possible definition would be: Play is manipulation that indulges curiosity.” (Schell, 2008, p.29-30).

Through a comparison method, the designer puts together a full list of essential characteristics to games: they are playful activities entered willfully. They have goals that frame the problem to be solved. Rules are also important because they set conflict and limitations on how to overcome the challenges. As Koster, Schell believes games have a certain connection to the real world. They are closed systems that somehow present a simplified version from the real world. Since it is set in a closed space, the elements have their own internal value – for example, there are people that pay real money to acquire in

game objects. The system also offers a range of choices that allows the players to interact with it, develop themselves inside the platform and work towards the goal. When the objective is achieved, the player wins – or loses in case of failure. However, on this quest to overcome the challenges and solve problems, games are an extremely engaging activity for the players (Schell, 2008, p.35). Taking into account all of these elements, Schell defines games as “a problem-solving activity, approached with a playful attitude” (Schell, 2008, p.36).

2.1.3.5. Jane McGonigal

Just as Schell, Jane McGonigal believes that voluntary participation is essential to games. However, she has a smaller list of defining traits for a game: goal, rules, feedback system and voluntary participation.

Goal is an element that is present in most of the definitions. This trait orients the players; tells them where to go; what to aim for and what the expected outcome is. Goals also provide a sense of purpose and give meaning to the users’ actions. The limitations that the rules impose are important because without them, the game would be too obvious and the goal would be too easy to achieve. This way the players face a challenging activity that they have to use their creativity and problem solving skills to overcome the obstacles. The feedback system is usually quantifiable and is a way to tell the players how well or badly they are performing in relation to the goal. This kind of system serves as a promise to the players that the goal is achievable. By showing how far or close the participant is from the objective, it motivates them to keep playing. As previously explained by Schell, voluntary participation works with the concept that the player must willingly join the activity. This ensures that the user experiences pleasurable, challenging and intentionally stressful work, but on a safe environment. (McGonigal, 2011, p.21).

It is interesting to notice that the game designer does not consider interactivity, graphics, competition, virtual environment or the idea of “winning or losing” as an essential part of games. They can reinforce and contribute to the experience and the main four elements, but they are not a defining trait (McGonigal, 2011, p.22).

Even though she has her own set of elements, she does not create her own definition. Instead, she chooses to use Bernard Suits’ description: “Playing a game is the voluntary attempt to overcome unnecessary obstacle” (Suits, 1978, p.41).

We choose to play games and overcome unnecessary challenges because reality is too easy and not as engaging.

“The real world just doesn’t offer up as easily the carefully designed pleasures, the thrilling challenges, and the powerful social bonding afforded by virtual environments. Reality does not motivate us as effectively. Reality is not engineered to maximize our potential. Reality wasn’t designed from the bottom up to make us happy” (McGonigal, 2011, p.3).

Goals and constant feedback on games gives people the sense of progress that lacks in real life work most of the time. The economist Edward Castronova says that more and more people are choosing the virtual world over the real one. This happens because the virtual systems offer an immersive experience and are funnier than the real world. He calls this shift a “mass exodus” to game spaces. Even though this is alarming, it puts pressure in the real world to adapt. In the near future, to keep the people connected to the reality, the real world will have to offer similar experiences to those available in the game systems (Castronova, 2007, p.10). The next section is dedicated to understand what is behind this phenomenon that makes game so engaging and makes people choose them over real life.

2.1.4. What makes games engaging?

The game mechanics combined result in a unique combination that is highly engaging. They have a psychological effect that impacts on the individuals’ reward system. The main rewards that games provide are satisfying work, social connection and purpose (McGonigal, 2011, p.49).

Those four factors are intrinsic rewards that generate a happiness feeling on the human system. To explain it, positive psychology believes that there are two different types of rewards that generate happiness and depending on the source, they can be intrinsic or extrinsic.

The first results from a source of motivation that comes from within the individual. Several theories explain it as the seek for self-fulfillment and challenges or the feel of curiosity. Intrinsic motivation the need that people have to fulfil their potentialities (Maslow, 1943); or the need that one has to explore and master the environment that surrounds themselves (Alderfer, 1972). A commonly used definition is: “A person is intrinsically motivated if he performs an activity for no apparent reward except the activity itself” (Deci, 1972, p.1). They are mainly activities that do not require an external

incentive – for example, money – for one to perform. An intrinsic source or motivation is more stable and provides a longer lasting reward that is self-fulfilling to the individuals (Csikszentmihalyi, 1990).

On the other hand, extrinsic motivation comes from an external source that not the individual or the action itself. They are not on the action for the sake of the action, but because of the external incentive or reward provided – money, material goods or status (Deci, 1972). However, the happiness that is a result from these rewards is not long lasting. Au contraire, happiness that results from external incentives will require bigger and better rewards to maintain the same levels of pleasure and satisfaction (De Botton, 2009, p.80).

Even though extrinsic rewards are not sustainable and very demanding, these are the ones most prevalent in real life. Games, on the other hand, are an abundant source for intrinsic rewards. On the coming sections, the study presents what are the particular factors that stimulate this response on the individuals' systems.

2.1.4.1. Satisfying work

In 1975, the psychologist Mihaly Csikszentmihalyi published a research entitled “Beyond Boredom and Anxiety”. His aim was to study a specific kind of happiness that he called “flow” and defined as: “the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it for the sheer sake of doing it” (Csikszentmihályi, 1975, p.4). In other words, it is a state of high focus that is extremely pleasurable and rewarding for a person when performing a certain activity. In the research, the psychologist identified eight recurrent components when people mentioned how it felt to be under that state:

1. The activity establishes clear objectives, this way the individuals know at all times what they are supposed to do and it is easier to focus.
2. Instant and constant feedback about the performance in the activity.
3. They are achievable tasks. There is a good balance between the level of challenge and the individuals' skills to solve the problem.
4. Feel of deep focus in the activity.
5. It is not boring and it takes away the worries and frustrations of everyday life.
6. It provides sense of control over our actions and possible choices.
7. It distorts the perception of time: hours feel like minutes.
8. Feeling that the activity is intrinsically gratifying.

(Csíkszentmihályi, 1990, p.49)

This list is a mix of components and feelings that the people on the study mentioned. The first three elements on the list state the components that an activity need to have in order to lead to a satisfying work and to the flow. The remaining elements are the feelings that result from the flow (Bachen & Raphael, 2011 *apud* Marins, 2013). The combination of those elements make people willing to spend a considerate amount of time and energy in activities that allow them to reach the flow state.

The two first items on the list are also essential game elements according to Schell and McGonigal. The third topic is just as important to keep the games attractive and stimulating to the users. Every game demands that the player exercises a set of skills to a certain level. If the game presents a good balance between its difficulty degree and the user's skill level, "the player will feel challenged and stay in the flow channel for longer" (Schell, 2008, p.150). This factor keeps people in the flow because it makes them feel good and motivated to perform more and better. However, if a person feels unable to fulfil a task or his or her abilities are lower than what a task requires, a state of anxiety or worry is unleashed. The extreme opposite is also possible. If a person's capabilities to achieve a task is greater than the level demanded, then boredom is the result. (Csíkszentmihályi, 1975, p.50).

Csíkszentmihályi (1975, p.42) explains that activities that lead to flow are taken out of pure pleasure; they are not obligatory and do not involve any kind of external reward as money, status or material goods. People engage on the activity for the sake of the action itself. In other words, they are taken voluntarily; just as McGonigal and Schell suggests the act of playing a game should be.

Yet, humanity's modern culture has developed on the basis of extrinsic rewards to motivate people to do their jobs: they get salaries, grades, promotions and prizes. This creates a cycle in which "the more a person complies with extrinsically rewarded roles, the less he enjoys himself, and the more extrinsic rewards he needs" (Csíkszentmihályi, 1975, p.4). Reality is boring because it lacks flow. The phenomenon of "mass exodus" perceived by Castronova (2007) has a direct correlation to it, because the act of playing is the ultimate flow experience (Csíkszentmihályi, 1975, p.37). Games are satisfying because they provide what lacks in the daily life activities: a feeling of self-satisfaction, achievement and flow.

2.1.4.2. Social Connection

Human beings are social animals. Through interpersonal relationships, they seek to create bonds and a sense of belong (Maslow, 1968). On human evolution, this drive to gather and be part of a community has allowed the people to cooperate towards survival and develop knowledge and technology (Wilson, 1978).

Before the invention of the computer, individual games as “solitaire” were extremely rare. Even though it is not a rule, many digital games fulfill this need for social connection by offering a cooperative or competitive system. The creation of the internet and social media were a big milestone to social connectivity in games. Before them, social interaction offered by games was local, which means that people needed to be at the same place to play together. There was no way to allow two or more people to play together if they were in different geographic spaces. However, after those landmarks, player connection got easier. Games progressively started to provide online multi-player mode. Even if a game was meant to be played solo, developers offered online platforms or online communities that allowed players to interact (Schell, 2008, p.354).

The Harvard Study of Adult Development found out that social connections are an essential part to people’s happiness. Relationships are more important than money or fame to keep people joyful throughout their lives (The Harvard Gazette, 2017). In fact, money could have an adverse relationship to social connection. The more money an individual makes, the more he or she is inclined to work extra and socialize less (Mogilner, 2010). Work is essential to pay the bills and it plays a role on the individual’s self-esteem and sense of productivity. However, the average weekly hours people work exceeds the amount required to get the psychological benefits (Layard, 2005).

This shows that, in the wrong levels, the extrinsic reward that comes from real life work can lead people to have less social contact. Martin Seligman (1991, p.243) explains that individualism is on exponential growth whilst collectivism is continuously declining. The culture of extrinsic rewards made people more immersed on their individual victories and achievements. McGonigal (2011) believes that if compared to games, reality does not intentionally stimulate social connections as much. Even if digital games provide less in person interaction, they still help to build stronger social bonds. The psychological effects are positive, as explained bellow:

“The more time we spend interacting within our social networks, the more likely we are to generate a subset of positive emotions known as “prosocial emotions.”

Prosocial emotions—including love, compassion, admiration, and devotion—are feel-good emotions that are directed toward others. They’re crucial to our long-term happiness because they help create lasting social bonds. Most of the prosocial emotions that we get from gaming today aren’t necessarily built in to the game design; they’re more of a side effect of spending more time playing together” (McGonigal, 2011, p.82).

Games help build bonds and a sense of belonging. They offer a diverse set of possibilities for interaction: online communities and forums allow the users to interact and discuss; and multi-player mode or social games allow people to play together. In either case, it provides an alternative way to maintain, tighten or make new social connections.

2.1.4.3. Purpose

One of the most fundamental feelings that humans seek is the sense of purpose. It is associated to health benefits as happiness and it lowers down anxiety and depression (Steger *et al.*, 2006). Throughout their lives, people try to build a legacy, make a difference or leave their mark in the world, all to find purpose. The feeling can also be triggered through individual actions that are important on a bigger scale than the self, like a community or an organization. They are small acts that summed up lead to a greater impact. Martin Seligman (1991, p.247) explains that an important component to create meaning is the attachment of the individual to a larger cause or entity than the self. The bigger the institution is, the more important the work on the individual level will feel – to the ones who have a bond with it. The psychologist believes that collectivism and sense of community are linked to purpose.

In the virtual world of digital games, it is hard to produce concrete real life results. However, McGonigal (2011, p.97) understands that this is not a problem. One can still feel the sense of purpose without producing real life value. What is important though is that the players connect to a community that aims to achieve the same challenging and large scaled goal, no matter how arbitrary it is. In this sense, games are a good alternative for those who want to feel part of a bigger cause. Games, mainly online, not only offer challenging objectives, but also provide a whole community that the players can be part of and feel like their efforts are relevant on a bigger picture.

Even if the efforts in game results on a virtual contribution, the feel of contributing to a cause is the same as if the efforts were made in the real world. The intrinsic reward that come from playing games is real and can have an impact on the real world as well. When an individual experiences this reward playing a game, the chances are that he or she will also seek this outcome on the real world. A study published in 2009 studied the relationship between the time spent playing games that demand the practice of “helpful behavior” and the gamers’ willingness to help others in real life. The research investigated over three thousand people range from college students to thirteen years old or younger. Throughout all of the ages the researchers reached the same conclusion: games that make people practice helpful behavior make the players more prone to help family, friends and even strangers in the real world (Gentile, Craig, Shintaro Yukawa, et al., 2009). However, McGonigal believes that reality still fails to deliver more opportunities for the people to be part of a community with challenging goals that aim a positive impact in the world (McGonigal, 2011, p.114).

2.2. Hunger: a structural problem

The present section explores the other side of Free Rice: the hunger and food security.

2.2.1. The status of world hunger

Food security is a complex concept that has been revisited, revised and enhanced through the years to ensure that it is inclusive and complete. In 1974, the World Food Summit first defined food security as “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (FAO, 2003, fao.org). However, this first attempt was mostly focused on the food supply side. In 1983, the Food and Agriculture Organization (FAO) expanded the concept to include the demand side: the access of food by vulnerable people. So they added to the description “ensuring that all people at all times have both physical and economic access to the basic food that they need” (FAO, 1983, p.14).

Through the years, it suffered other alterations until 2002, when the State of Food Insecurity Report was published, defining food insecurity as “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2002, fao.org). So, if in one side security exists when people have

access to an adequate and continuous source of food that allows them to lead a healthy life; food insecurity exists when people do not have the adequate access to food and thus their health is jeopardized (FAO, 2003).

To achieve food security, four dimensions must be considered and fulfilled: availability, access, utilization and stability. Physical availability of food focuses on the supply of food. It depends on the levels of production, stock and trade. Economic and physical access to food depends on infrastructure – to allow access to the markets – and the financial situation of the individuals – to ensure that they will have enough money to purchase food. This dimension is severely threatened by food deserts and poverty, for example. Assuming that the two already mentioned dimensions are present, then the household must decide that to buy and how to prepare it. Utilization of food encompasses how people use the food to convert it into energy and achieve their dietary needs with good and nutritious food. Education in nutrition, adequate preparation and storing methods lead to good utilization of the food. Finally, stability of the food input must be secured over the time for the people to be food secure. This means that at all times people must have enough economic means to purchase food; that it must be available in the markets and that the people know how to balance and utilize the resource efficiently to achieve the necessary calories' intake (FAO, 2008).

Even prior to the definition of food security and its dimensions, food was ensured as a right in the Universal Declaration of Human Rights (1948). Article 25 established that:

“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control” (UN General Assembly, 1948, un.org).

Definitions and declarations are important because they help to understand the problem and they give an aim to actions, as the Sustainable Development Goals (SDGs) for example. Adopted in 2015 by the UN Member States, this Agenda identifies issues that should be of global concern – to achieve peace and prosperity – and sets targets to tackle them down. Among the seventeen goals, “Zero Hunger” is the second one, just

after “No Poverty”. In more detail, the second goal aspires to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture” (UN, 2015, un.org).

However, even with actions and awareness raised to the issue, world hunger is on the rise again after decades of slow, but steady decline. In 2015, there were 795 million people hungry in the world (FAO, 2015). In 2019, this number has gone up to 820 million people, with Africa as the most affected region and Latin America and Western Asia in second (FAO et al. 2019). This change on the world hunger scenery threatens and undermines the 2030 goal to achieve Zero Hunger.

On a broader level, hunger is not the only concern since more than 2 billion people around the world are still food insecure. This means that even though they are not undernourished, they suffer from “the lack of regular access to nutritious and sufficient food” necessary to lead a healthy life. As a result, those individuals are at risk of becoming malnourished (FAO et al. 2019).

However, world hunger is not due to the lack of food production, but because of lack of access. The global production of food is more than enough to feed the current population. In 2002, the per capita calories production was already 30% higher than in the previous 30 years – despite the population growth of more than 70% (FAO and WFP, 2002, p.9). In 2011, the remarkable landmark of 2870 kcal/per day per capita was achieved (FAO et al., 2015, p.24) and almost a decade later we still produce enough food (FAO et al. 2019).

It is important to highlight that every year a third of all that is produced either is lost or goes to waste. This represents a loss of US\$1 trillion to the global economy. However, this represents more than an economic loss, since the production process generates carbon emissions and uses resources as water, energy, labor, fertilizers and other goods (WFP USA, 2019).

Even though they are under the same umbrella, food loss and food waste are two different things. Food loss occurs when food is discarded, incinerated, lost or disposed throughout the food supply chain – excluding the retailer level. For example, it happens due to non-appropriate storage facilities and transporting or non-efficient harvesting tools. Food waste, on the other hand, “refers to the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers” (FAO, 2019, fao.org). The waste happens in the end of the supply chain when, for example, the fresh products are discarded when they do not match shape, size or color standards for the consumers to buy. Retailers also discard products that are close

to or beyond the “best-before” date. On the consumer level, the food either spoils or the leftovers of a cooked meal goes to waste.

The pattern varies from country to country, but overall in the developed countries food waste is more common while in the developing countries and least developed countries food loss is more frequent – due to lack of appropriate storage facilities or transportation to the markets. The rich countries waste a staggering amount of 222 million metric tons annually. This is almost equivalent to the Sub-Saharan African food production: 230 million metric tons (FAO, 2017). The United Nations (UN) sees food loss and waste with great concern and to fight it they have set a target on the SDGs. By 2030, goal 12.3 aims to reduce the per capita annual food waste by half (UN, 2020).

In 1999, the Committee on Economic, Social and Cultural Rights introduced the General Comment No. 12 about the right to adequate food. The document states that the right to adequate food stands on three main components: adequacy, availability and access. Adequacy means that the food should meet the daily dietary needs of the individuals. The food must also be in good conditions to be consumed, free from toxic substances and it must be culturally acceptable (UN, 1999, art.7). Availability determines that the food offer in the markets must be higher or equal to its demand in order not to deprive anyone (UN, 1999, art.12). Finally, availability establishes that the food must be economically and physically accessible and the dietary expenses should not compromise other basic needs as education or healthcare (UN, 1999, art.13).

Still, those elements are not real for the people that remain hungry or are food insecure. Farmers are one of the most vulnerable groups and they are four times more likely to be poor than any other individual working on a different sector. Around 75% of the impoverished population are small-scale food producers who live in rural areas and this percentage is even higher in the developing countries. These small-scale food producers represent more than 90% of the farms in the world and they are responsible for more than 80% of the global food production annually (FAO, 2015, p.26-31).

Even though food is a right that should be guaranteed to the people, hunger is a problem that the world has faced for many years now. There is enough food in the world to feed its population, yet people are still hungry. Vulnerable populations lack access or the resources to get food and as a result are deprived from a basic need and right. The fight against hunger is a great challenge that must be thought through collective efforts of different actors in the society. This is necessary since hunger is a persistent problem

because it is deeply rooted in the social structures and linked to different, as demonstrated in the following sections.

2.2.2. The link between hunger and violence

In 1969, Johan Galtung published a paper in which he expanded the meaning and the way we see violence. He refuses to look at violence as a merely act of purposefully harming and presents the following definition:

“Violence is present when human beings are being influenced so that their actual somatic and mental realizations are below their potential realizations. (...) Violence is here defined as the cause of the difference between the potential and the actual, between what could have been and what is. Violence is that which increases the distance between the potential and the actual. (...) When the actual is unavoidable, then violence is not present even if the actual is at a very low level.” (Galtung, 1969, p.168-169).

According to this definition, hunger – as it is nowadays – is kind of violence. Starvation would not be seen as a sort of violence if there was not enough food in the world to feed all of its inhabitants. However, as previously explained, enough food is produced in the world to meet the daily dietary needs of the global population. The reason why hunger is still present is because of lack of access to food due to socio-economic inequalities. There is enough food to feed all; hence, the “potential realization” would be a world with zero hunger. However, the “actual” is a different scenario in which there are still 820 million people starving. Hence, there is a gap between those two positions and that is where the violence lies.

On his research, Galtung proposes different dimensions to violence: direct, structural and cultural. Direct violence is a physical or verbal behavior that aims to do any kind of harm towards others as a punch, a gunshot or murderer for example. In the process, a subject can always be pinpointed as the perpetrator of the action. However, direct violence is a result of deeper reasons that have roots on indirect violence. Those come from structural and cultural sources and they work as legitimizers of the direct violence (Galtung, 1969, p.170).

On structural violence, the harm that is done is indirect and invisible since there is no actor responsible for it. As the name says, it is present in the structures of the society

and “shows up as unequal power and consequently as unequal life chances”. It also results in unequal resources distribution. Because it lies in the structure, it is normalized as a component that is part of the society. This also makes it static and very hard to change, requiring a multi-dimensional approach to shift the situation (Galtung, 1969, p.171). Examples of structural violence are socio-economic inequalities as poverty, hunger, illiteracy and lack of access to health care.

On the same line of thought, cultural violence has no subject that performs a harmful action; hence, it is also invisible and indirect. This type of violence uses the symbolic spheres of human beliefs to legitimize discrimination and justify direct or structural violence. Compared to structural violence, cultural is harder to change because it is a result of several years of perpetuation of certain, traditions, behaviors and beliefs. Some examples for this violence are religious discrimination, sexism, racism, homophobia and antisemitism (Galtung, 1990, p.291).

As previously explained, direct violence is legitimized through structural and cultural violence. For example, the Crusades (1095–1291) used religious differences to justify the wars; Hitler in World War II (1939-1945) used antisemitism to segregate Jews – structural violence – and then sent them into concentration camps – direct violence. Through the examples, it is possible to see that direct violence is just the tip of an iceberg that hides deeper root causes underneath it.

When Galtung refuses to examine violence as a mere somatic harmful act, he also expands the concept of peace. Before, there was an understanding that peace was the opposite of war or the absence of direct violence. However, with the inclusion of other dimensions of violence, peace also contemplates the achievement of social justice. Hence, this multi-dimensional view on peace is called positive peace and the narrowed view on it is negative peace (Galtung, 1969).

Hence, hunger is a type of violence, as there is enough food in the world, but it is not evenly distributed among all. In addition, hunger is a result of unjust social structures that causes different kinds of inequality as poverty, lack of education, political exclusion or cultural intolerances. In a way, they are all connected, as one influences the other. That is why hunger is a multidimensional problem and must be tackled consistently and through different actions – that treat different root causes.

2.2.3. Why is it important to fight hunger and how can it be done?

Food security is directly linked to human security. Healthy individuals that meet their daily dietary needs are less vulnerable to diseases and poverty (FAO, 2015, p.26). Among the short term benefits of a well-fed population are the improvement on work productivity; it relieves the public health care from diseases related to undernourishment – allowing to reallocate resources on other matters; and it increases school attendance and performance (Arruda et al. 1994).

It is widely understood that extreme poverty is a direct root cause for hunger. However, hunger and undernourishment can also be a cause for poverty or at least maintain/worsen the status of poverty (FAO and WFP, 2002). They debilitate the capacity of the individuals through:

- “Reducing the capacity for physical activity and hence the productive potential of the labour of those who suffer from hunger – and that is usually their only asset.
- Impairing people’s ability to develop physically and mentally, retarding child growth, reducing cognitive ability and seriously inhibiting school attendance and performance – thus compromising the effectiveness of investment in education.
- Causing serious long-term damage to health, linked to higher rates of disease and premature death.
- Passing from generation to generation: hungry mothers give birth to underweight children who start life with a handicap.
- Contributing to social and political instability that further undermines government capacity to reduce poverty. Chronically undernourished people are, therefore, caught in a hunger trap of low productivity, chronic poverty and hunger” (FAO and WFP, 2002, p.10).

Thus, chronic hunger results in a myriad of other problems to the individuals and to the society. It can lead to food riots and generate political instability (FAO, 2015, p.27) as happened in Egypt in 2007-2008. The spike in the food prices linked to other internal factors generated political turmoil in the region and led to the Arab Spring (Zurayk, 2011). Hunger resulting from conflicts of protracted crisis can also lead to big population displacements, aggravating humanitarian crisis.

The fight against hunger is important and on a State perspective, the reduction of hunger creates a positive impact in the economy. A FAO study found out that improving the individual's nutrition enhances the country performance due to better work productivity and higher life expectancy. To reach that conclusion, the research raised the Dietary Energy Supply (DES) to 2770kcal/day in certain countries that the individuals had a calories intake below that level. The “results suggested that this caloric boost in countries where it was below that level would increase their per capita GDP growth rate by between 0.34 and 1.48 percentage points per year” (FAO, 2001, fao.org).

The 1993 economy's Nobel winner Robert Fogel also noticed this correlation in a study linking France's and UK's economic growth – between the years 1700 to 1900 – to efforts in the health sector to improve the workers nutrition. At that time, the undernourishment situation of those countries was comparable to Somalia's nowadays. However, the nourishment investment through calories input resulted into work output. This led to a 50% growth in the economy of those countries from 1800 on (Fogel, 2004, p.643-658).

Hunger is not an easily solvable problem. It takes time, financial investment and public policies with a multi-dimensional approach since its causes are linked to conflict, political and economic instabilities, corruption, climate change or catastrophes, protracted crisis and poverty (FAO, 1996). One of the key factors for hunger reduction is the inclusive growth of the economy. This means that the growth must reach the impoverished population, provide better life and job opportunities, and improve small-scale farmers' productivity. The end goal is to enhance the vulnerable population subsistence capacity, to reduce poverty and social inequality. The better a country performs economically, less likely its population is to suffer from hunger (FAO, 2015, p.26).

Another important measure to fight hunger is to focus on social protection. Actions as cash transfer that focus on the promotion of food security, health and education are good ways not only to reduce hunger but also to stimulate the inclusion of the vulnerable populations in the economy. That actions' impact can be enhanced if combined with measurements that boost small-scale agriculture as the purchase from local farmers by government or international actors. An example is the acquisition of food from small household producers in Africa to promote school meals distribution programs in the same areas. This supports the local farmers by giving them means to continue their productions and improving their incomes (FAO, 2015, p.27).

When the focus is poverty reduction, mainly in low GDP countries, the investment and growth of the agricultural sector is better than any other (World Bank, 2008, p.14). In the Sub-Saharan Africa, the development of the agriculture segment is eleven times more effective for poverty reduction than in others that hold no link to it (FAO, 2015, p.28). This kind of investment increases labor demand in the rural areas, improves income distribution and reduces goods prices, making it more accessible for the local populations (World Bank, 2008, p.14).

School meals are particularly promising for long-term results. For many kids, those meals are the only one or the most complete they will have in the day. Hence, it increases class attendance. This output also improves the concentration ability of the kids and consequently enhances grades performance. On the long run, this could result in better life opportunities and jobs, higher income, and personal development for the individuals (FAO and WFP, 2002, p.16).

Women also play an important role in maintaining the food security of the household and mainly of the children. Due to their cultural role of “care takers” women tend to spend more of their income on food for the family – if compared to men. In addition, women’s income is more associated with children’s nutrition than men’s is. Women’s health is also associated to the improvement on children’s nutrition. Healthy mothers reduce the risk of giving birth to stunt infants and enhances the nourishment of the kids through breast-feeding (Quisumbing *et al.* 1996). Children’s nutrition dictates how well they perform in school and their future opportunities in life. Full education and good nourishment reduces the chances of them to fall back into poverty in their adult lives as well as their next generations (Ratcliffe, 2015).

2.2.4. The States’ and other institutions’ role

CESCR’s General Comment N.12 (1999) determines that the States have three obligations in regards of the right to food: to respect, to protect and to fulfill, explained bellow:

“In turn, the obligation to fulfil incorporates both an obligation to facilitate and an obligation to provide. The obligation to respect existing access to adequate food requires States parties not to take any measures that result in preventing such access. The obligation to protect requires measures by the State to ensure that enterprises or individuals do not deprive individuals of their access to adequate

food. The obligation to fulfil (facilitate) means the State must proactively engage in activities intended to strengthen people's access to and utilization of resources and means to ensure their livelihood, including food security. Finally, whenever an individual or group is unable, for reasons beyond their control, to enjoy the right to adequate food by the means at their disposal, States have the obligation to fulfil (provide) that right directly. This obligation also applies for persons who are victims of natural or other disasters" (UN, 1999, un.org).

However, Arjun Sengupta, a remarkable Indian economist, argues that resources transfer to the impoverished and most vulnerable is not enough to create a sustainable development. To achieve zero hunger and development, International Organizations and other countries must come together and promote "international cooperation for supplying technology; provide market access; adjust the rules of operation of the existing trading and financial institutions and intellectual property protection" (Sengupta, 2002, p.364).

Even though the States must guarantee its population has access to food, this is not always the case. Mainly in countries severely affected by conflicts, the government structure is weak to provide a safety net for the people, including access to food (Harmer and Macrae, 2004). Conflicts reduce or cease food production and labor for it due to displacement (FAO, 2015, p.38). They also destroy agricultural infrastructure even though it is illegal according to International Humanitarian Law (Inter-Parliamentary Union, 2016).

When the State cannot fulfill its duty with the population, other institutions can provide help as local NGOs and international organizations. Both FAO and World Food Program (WFP), for example, develop and implement project that aims to mitigate and relief hunger of vulnerable groups affected by crisis as refugees, internally displaced people or hard to reach communities. The aid programs are developed to meet the most basic and pressing dietary needs of the beneficiaries, that otherwise would suffer from food insecurity. Different contexts requires different measurements, but usually those actors provide food aid, school meals, vouchers (FAO, 2015, p.36) cash to buy food or inputs for food production, food production input kits and trainings (FAO, 2017).

2.2.5. The World Food Program

This section is destined to understand the WFP and how it plan its projects. This is necessary because the subject of the case study was created and is ran by this institution.

In 1961, the UN established the WFP as an attempt to provide multilateral food aid. Nowadays, they are the biggest humanitarian organization that works providing food aid in more than eighty countries all over the world. They are funded entirely by donations – including individuals, countries and other organizations. Besides providing food aid, the focus of the organization is to improve households’ livelihoods through better nutrition; they also build capacity in local communities to promote a longer-term development. Two thirds of their work is on countries affected by conflict, where the individuals are three times more likely to be undernourished (WFP, 2020).

The organization has two work fronts: emergency aid and development projects. Following this line of work, the WFP aims to fulfill three main roles: “prepare for and respond to shocks; restore and rebuild lives and livelihoods; and reduce vulnerability and build lasting resilience” (WFP, 2013, p.10). Even though no solution is the same, and each context requires a different program, the WFP utilizes the following toolkit to help on the design of the project:

MAIN TOOLS		
Transfers	Operational Services	Technical Assistance, Partnerships and Advocacy
<u>General/Targeted Distribution</u> <ul style="list-style-type: none"> ➢ Food, including fortified foods ➢ Cash and vouchers ➢ Specialized nutritious foods 	<u>Analysis</u> <ul style="list-style-type: none"> ➢ Vulnerability analysis and mapping (VAM) ➢ Early warning products and tools ➢ Emergency needs assessments ➢ Context and market analyses ➢ Capacity assessments ➢ Gender, protection and conflict analysis ➢ Response analysis 	<u>Technical Assistance</u> <ul style="list-style-type: none"> ➢ Policy and programmatic advice ➢ Transition strategies ➢ Pro-smallholder procurement ➢ South-South and triangular cooperation ➢ Weather risk insurance
<u>Asset and Human Capital Creation</u> <ul style="list-style-type: none"> ➢ Food assistance for assets (including food and cash for work) ➢ School feeding ➢ Food and cash for training ➢ Insurance for assets 	<u>Procurement</u> <ul style="list-style-type: none"> ➢ International procurement ➢ Local and regional procurement ➢ Warehouse receipt programmes ➢ Forward purchase ➢ Twinning 	<u>Partnerships</u> <ul style="list-style-type: none"> ➢ National and local governments ➢ Regional organizations ➢ United Nations agencies ➢ Cluster leadership (logistics, emergency telecommunications) and co-leadership (food security) ➢ International organizations ➢ NGOs and civil society ➢ Private sector
<u>Nutrition</u> <ul style="list-style-type: none"> ➢ Supplementary and complementary feeding ➢ Mother-and-child health and nutrition (MCHN) programmes ➢ Programmes addressing and mitigating HIV and other pandemics ➢ Community-based management of acute malnutrition 	<u>Logistics, ICT, Engineering</u> <ul style="list-style-type: none"> ➢ Surface logistics services (sea and land) ➢ Aviation services ➢ Global pre-positioning ➢ Information and communications technology (ICT) ➢ Infrastructure 	<u>Advocacy</u> <ul style="list-style-type: none"> ➢ Advance food and nutrition objectives with governments and through global and national forums

Source: WFP, 2013, p.20.

To provide nutrition to the most vulnerable, the organization utilizes three transfer methods. The first is an emergency measurement that distributes food, cash or vouchers for the people in need. The second one is the investment on human capital. It aims a longer-term impact by the provision of trainings that help the individuals develop skills and secure more stable livelihoods. Lastly, there are community based nutrition programs that aim to improve the nutritional situation of – mainly – mothers, pregnant women and kids (WFP, 2013, p.21).

The operational services guarantee that the food assistance will reach the targeted location on the most effective way possible. The analysis helps the WFP to assess vulnerable communities and the ability a certain country has to provide the necessary nutrition to its population. This tool helps to foresee disasters and to minimize the response time; it identifies the most affected places to prioritize the aid. Procurement is responsible for buying the necessary resources to provide the aid. In the process, priority is given to purchase the food on a local or regional when it does not worsen the food insecurity conditions. This practice supports the local farmers and lowers the delivery time. The logistic and engineering expertise is necessary to guarantee that the aid will get to hard to reach places in the lowest time possible, in the most efficient and responsible way (WFP, 2013, p.21).

The last category englobes a diverse range of tools. The first one is technical assistance; it provides expert consultancy – to governments, and regional organizations – on policy making, institutional advice to help to build food security and nutrition capacity. The second tool – partnerships – are essential to make the operations feasible in different levels. The WFP works with a diverse set of partners – as governments, local NGOs, other international organizations – to help design and execute their programs. Lastly the institution uses advocacy to raise awareness and concern – on regional, national and international level – about hunger and the vulnerable situation of the poorest (WFP, 2013, p.22).

2.3. Free Rice: a fun way to contribute on the fight against hunger

This section presents the case study based on the Free Rice, a game created and managed by the WFP. The platform aims to fight hunger by engaging the civil population – non related to humanitarian work – on the cause through the use of a game. Free Rice was developed in 2007 by the WFP. Currently, it is on its second and renewed version (Free Rice, 2020).

The game has two objectives: to provide free informal education through multiple-choice questions and – the main one – to fight world hunger (Free Rice, 2020). The idea is to offer education through a fun way and at the same time engage the individuals on a world issue.

The game uses ads to sponsor the players donations. For each new question there is an ad displayed on the screen. The money raised by each correct answer is equivalent to around 10 grains of rice. Even though the project uses the rice premises, it does not only purchase this variety of food. Instead, the funds are also used to provide “food baskets” – a mix of foods – to people in vulnerable situations around the world. Rice is provided in programs where this good is a staple part of the country’s diet.

2.3.1. Mechanics of the game

The game works in a rather simple way: it is – multiple choice – quiz based and for every question answered correctly, the player donates the equivalent amount of money to 10 grains of rice to the project. The money comes from the ads that are displayed on the screen while the user plays the quiz, as image 1 shows (Free Rice, 2020).

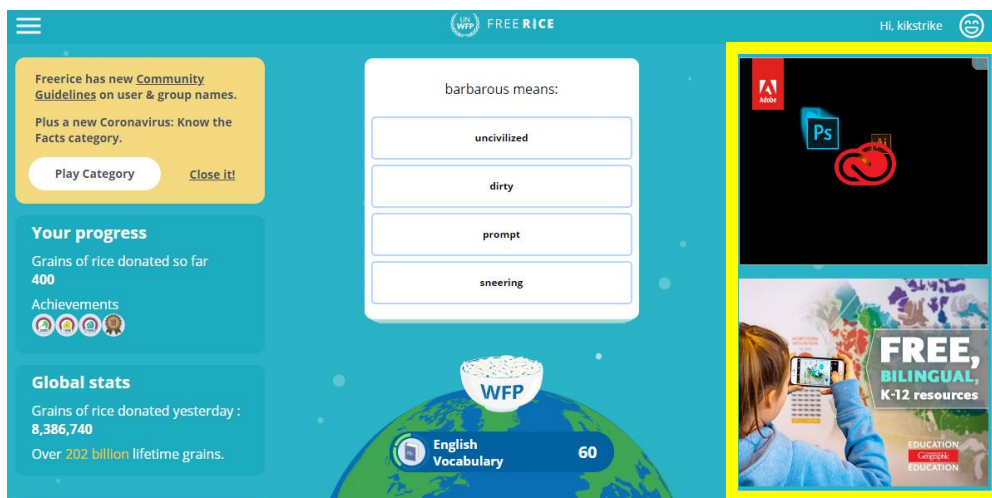


Image 1: Free Rice ads marked in yellow. Source: Free Rice, 2020.

According to McGonigal (2011) – and other designers –, games need an objective to motivate and orient the users towards achieving it. In this case, the project has a very clear objective: to fight and eradicate hunger. However, such a broad goal without smaller targets might be not as stimulating. Specific milestones that keep track of progress can keep the user more engaged and motivated towards the end goal. A possibility to consider is that the game offer this through one-time achievements. In the platform there is an extensive list of specific milestones that the user can achieve. Once accomplished, they will be awarded a badge that is exposed in the profile.

Even though it is a virtual system, the project was designed to fight a real world problem. According to Koster (2004), this characteristic makes the game relate to reality much more. In an objective way, hunger is a problem to solve – or a “puzzle” according to Koster’s words. What the project managed to do was to turn it into a formal system that allows people to relate to it and to help solve it. Hence, its potential for a real positive impact is more feasible.

The quiz offers several educative categories – that divide under several other subjects – that the users can choose from to improve their knowledge. They are: SDGs, English, geography, humanities, language learning – this offers other languages than English –, Math, Science and coronavirus facts. The game has an extensive questions database that allows the player to pick from the hardest to the most basic level (Free Rice, 2020). This was designed to make the game challenging to the different knowledge profiles. According to Koster (2004, p.54), this is an interesting element, since challenges offer cognitive stimuli to the brain.

Even though the game is simple, the platform delivers interactivity to the user. As previously mentioned, this is an element defended by Schell (2008, p.35) in which the system offers a range of choices that allows the players to interact with it, develop themselves inside the platform and work towards the goal. On Free Rice, every question provides four options to choose from. In order to answer the question, the users have to choose one of the options – make a decision – and on doing so they progress in the game. If they respond correctly, they make a donation and contribute towards the main goal. If they miss it, the correct option is revealed and another question comes in the sequence. Even though this last option does not offer progress towards the objective, it provides personal development. On showing the correct option, the game allows the person to learn a new word or piece of information.

The rules – another frequently cited element by the designer – is clear and simple in this game. Every question answered correctly results in a money donation equivalent to 10 grains of rice. Another element that the game presents is quantifiable results. According to Sallen and Zimmerman (2004) this plays a role to keep the users engaged and motivated towards the end goal. Free rice does this in several ways: it offers a user count of how much the user has donated in total and in the specific round he or she is playing. It also displays the total amount donated on the previous day and globally throughout the time (image 2).

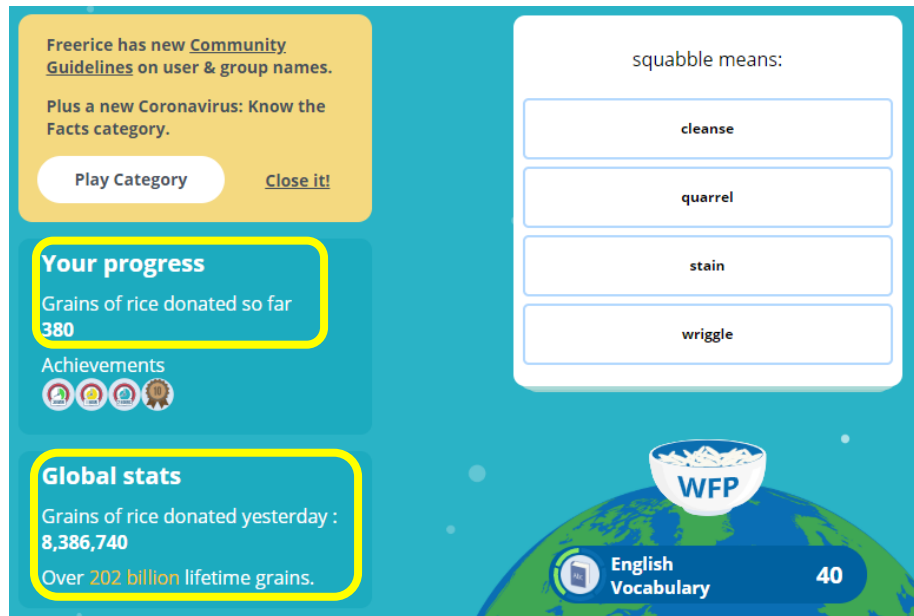


Image 2: global and individual amount of rice donated – highlighted in yellow. Source: Free Rice, 2020.

The display of the rice bowl is another interesting resource to keep the motivation and engagement (image 3). This along with the numerical progress is an element of instant feedback (McGonigal, 2011). The bowl fills up with rice proportionately to the player's progress. Another way that the game provides feedback is letting the user know if the answer is right or wrong; and what the correct answer is – in case of failure.



Image 3: Rice bowl progress. Source: Prepared by the author (me) using Free Rice images.

Even though this is a game that gathers people to fight against the same cause, it presents an artificial form of conflict (Sallen and Zimmerman, 2004). Free Rice presents

both forms of conflict: cooperative and competitive. It is cooperative exactly because all of the users are there – performing a collective effort – to reach the same common goal: zero hunger. However, the platform allows the players to be part of groups and has a ranking system indexing groups and individuals. The person or group who contributes the most gets first place. On an individual level, it also shows how well ranked the person is, even if he or she is not part of the top leaderboard. However, this form of competitiveness motivates the player to work harder to be one of the top contributors. Hence, the outcome is positive because the more people play more donations are made. Even though simple, the game presents several of the elements introduced by the different designers – previously exposed. The following table attempts to gather all of the mechanics involved in the project:

Elements	Suits	Sallen and Zimmerman	Koster	Schell	McGonigal
Rules	X	X		X	X
Objectives	X			X	X
Artificial conflict		X		X	
Quantifiable results		X			
Fun*			X	X	
Problem solving tool			X	X	
Can be won or lost				X	
Interactive				X	
Challenging				X	
Creates internal value				X	
Feedback system					X

Table 1. Games mechanics present in Free Rice

* Fun is a subjective concept that is highly dependent on the user experience. Thus, it will not be considered as a present element here.

X – Elements defended by the authors.

X – Elements defended by the authors that are present on Free Rice

Source: Prepared and consolidated by the author (me) from various sources.

The voluntary participation – defended by McGonigal (2011), Suits (1978) and Schell (2008) – is not present on the table, as it is not considered as game mechanics. However, it is pre-requisite for the experience to be enjoyable and fun.

According to the table, the game aligns most with the proposals of Suits (1978), Sallen and Zimmerman (2004) and McGonigal (2011); and to a certain point with Koster (2004) and Schell (2008). This list of elements is responsible to engage and motivate the players to fight hunger even if they do not take any physical actions. Even though it is played in the virtual world, this is a project concerned about a real world issue. Hence, according to Hunter's and Werbach's (2012) classification, this falls under the category

of “games for change”. Free Rice is a serious game that aims to promote social benefit not just through education, but because it helps to fight world hunger.

2.3.2. User engagement

The way a game is designed is important to guarantee user engagement. However, this is not the result of the mechanics only, but of the intrinsic rewards that people feel when playing. As previously presented, they are flow, social connectivity and purpose.

From those, the one that has a strongest presence is the purpose. Even though the “hunger eradication” goal is too broad, it brings a considerable sense of importance to the player. It is the greatness of the objective that can make the users feel like their efforts are relevant in a context greater than their own lives. The too broad goal – that could have been a weakness – can actually bring an intense sense of purpose to the game. It shows that the people are working towards a great change on a global scale.

The fact that the project is ran by the WFP creates a certain bond to a big and well-known institution of global impact. According to Seligman (1991, p.247) this makes the personal efforts for donating feel more relevant to the ones who perform it. However, the game is not completely transparent about how the money is used. They do mention that 100% of the money donated goes entirely for the WFP and that 93.5% goes directly to the funding of the feeding and nutrition projects. In the archives of the older version of the game there is a small list containing the locations, how many people and for how long they helped with Free Rice funding (to see the list check appendix I. Source: Free Rice, 2014). It is important to highlight that the list is not complete and there is no full report about the actions the project specifically funds.

If on the one hand the game offers a strong sense of belonging and purpose, on the other hand it is weak in social connectivity. Even though there are groups that the users can be part of, they do not allow any kind of social interaction. There is no way to communicate and chat inside the groups nor there is a forum that allows the users to share their experiences. As McGonigal (2011) argued, social interactivity can strengthen the sense of belonging and cooperation. It allows the people to connect in a deeper level by sharing their victories, challenges faced or worries. In the process, it helps the users realize that they are not alone in the fight. Because the game does not allow interaction within the platform, the players resort to other platforms as twitter. There, the groups present in the game gather and event set targets to reach monthly.

The last element to analyze is the flow. As previously mentioned, to reach this state is necessary clear objectives, instant feedback and well-balanced tasks (Csíkszentmihályi, 1990, p.49). Even though big, the goal of the game is clear: to eradicate hunger. The platform does offer an efficient feedback system either showing the amount of rice donated or revealing if the answer was right or wrong. In regards to well-balanced tasks, the platform offer different kind of difficulty levels from which the users can choose. This provides flexibility to the users. However, if they choose a level that is too easy or too hard for them, the game can become boring or frustrating. There is no natural progression offered by the quiz. An example of this would be: the more one plays and gets questions right, the more one advances on the difficulty of the quiz. This lack of automatic adjustment could put in check the balance of the challenges versus the skills of the players. If there is no harmony between those two, it is harder to reach flow – even if the other elements are present in the game.

2.3.3. The impact beyond the screens

Since the impact of this game goes beyond the screens, this section analyzes the project in accordance to the main tools used by the WFP on their programs – previously presented. However, the full analysis is limited due to the lack of an annual report produced by Free Rice.

Free Rice is mainly a transfer program. The money raised with it goes to the distribution of food to vulnerable populations; to protect them from starvation; and to improve their nutrition. Food aid as an emergency response action aims for short-term results. Its main purpose is to guarantee the population's right to food; to avoid that it dies from starvation; and to give certain stability to the people affected by conflict and crisis (FAO, 2002). However, this is not a sustainable measure that promotes economic development.

Looking at the list of operations – that Free Rice funded – in the old archives, there are other kinds of modalities of food distribution. They also funded school meals, for example. According to the toolkit, this is a measure that supports the development of human capital. Its impact goes beyond the short-term impact because it encourages kids to go to school. As previously explained, school meals distribution increases class attendance; and the nutrition provided by the meals enhances focus and performance. Well-fed and healthy kids learn more efficiently. On a long-term picture, this builds up a youth with better life opportunities, better income perspectives and less vulnerable to fall

into poverty (FAO and WFP, 2002). Overall, it is an action that helps on the development of the communities and empowers people to break the poverty cycle. However, to see the results, this measurement needs continuity over the time. On the list provided by Free Rice it is notable that the duration of the distribution was for a short period. This would compromise the long-term results if no other actor gave continuity to it.

The project also distributed take-home rations to pregnant and nursing women. This action falls under the nursing group on the toolkit. Nourishment programs that aim to help women and mother can provide longer-term impact. Good nourishment during pregnancy reduces the chance for the kids to be born stunted or malnourished. It also lowers child mortality rates. Empowered women that know the importance of nourishment are more likely to invest the household money into food to keep the kids nourished. Over the time, this lowers the vulnerability of the next generations to hunger and poverty (Quisumbing *et al.* 1996). However, the records show that the program was able to support the distribution of rations to mothers for two months. This is a rather short period if considered the pregnancy and the nursing time – that takes more than two years.

To perform all of the local actions the organization first need to pick the community to receive the aid. The money raised by Free Rice comes with no donor restrictions. This means that they can pick the location and design the action the way the WFP think it is best. The biggest share of WFP's funds comes from other institutions or government donors. However, this money comes with certain attachments as donors can make a series of demands on how or where the money should be used (Hoeffler and Outram, 2011). Hence, Free Rice donations are directed to “countries that need it most, often those that don't make the headlines in the news” (Free Rice, 2014, freerice.com).

To decide the communities that will get the aid, the WFP has to do vulnerability analysis and mapping. Along with the assessment, Free Rice also performs food procurement. They give priority to acquire food locally or regionally in relation to where the operation will be (Free Rice, 2014). This sort of practice injects money in the local communities and supports small household producers. The money improves the farmers' income and with it, they can buy production inputs as seeds or tools; hire people to help; and buy other essential goods as food. According to FAO (2015, p.27) local procurement of food is a way to promote inclusive economic growth and development as it helps on the distribution of economic resources more evenly in the poorest share of the population. By doing so, it helps to reduce poverty and consequently, hunger. In terms of logistics, local procurement is lowers delivery time and transport costs. This, in crisis or disaster

response is crucial since the longer the aid takes to arrive at the affected place, the more the population suffers (WFP, 2013).

Finally, the partnerships are an important tool to make the project feasible. There are different level of partnerships involved in it, as governments and local NGOs to help on access issues and on the execution of the project. However, there are two actors that should be highlighted: the civil society and private sector. The civil society is crucial for Free Rice. If it were not for their individual efforts, engagement and time playing, there would be no donations. Free Rice is an initiative that uses the power of the civil society and show that can help solve world issues. On the other hand, the sponsors – the private sector – are the ones who make the donations possible. Each actor is an important component for the project in a unique way.

Ever since the game was aired, it raised a total of 202 billion grains of rice. According to their website, the meals provided by the project offer a dietary value of 2100 kcal/day, divided between two meals a day. In the countries where rice is a staple part of the diet, they offer 400g of it per person per day – or 200g per meal – along with some other food items to make sure that the diet is rich in different vitamins and nutrients (Free Rice, 2020). Making a rough calculation, if the program only distributed rice, it would have been able to provide 22,4 millions of meals or to feed 11,2 million people – taken the information on the website as a basis².

Compared to the number of people hungry around the world – 820 million – and the number of players on the net – 2,1 billion –, this is still a small amount of meals donated. However, in the fight against hunger any aid is important, no matter how big or small. The games' market has an enormous potential to help solve real world problems. Yet, games for change is a segment that started to be explored recently by users and organizations. It is progressively growing and its power is unveiled by initiatives as Free Rice – that prove that games can be used for purposes other than entertainment.

3. Research Design

3.1. Sampling

This is a qualitative research with a non-probability sample. The subjects was selected in a way to be relevant for the study and for the research questions (Bryman, 2012, p.418). The unit of analysis focuses on the individual level particularly on Free Rice players.

² 45 grains of rice per grams of rice. (Free Rice, 2020).

According to Babbie (2010, p.100), targeting individual descriptions is relevant for social research that aims to understand and analyze social groups and interactions. Thus, this is relevant since this study aims to understand how the Free Rice game engages people on the fight against hunger by analyzing how the players feel about the game.

The research is non-probabilistic. It used a mix of purposive and convenience sampling. According to Bryman (2012, p.418), purposive sampling is used to guarantee a certain variety in key characteristics that the researcher need in the sample for it to be relevant for the study. In this study, the subjects were picked in order to represent different countries, and genders. The wide range of subjects was chosen in order to provide varied points of views. The game is an online platform and can be played from anywhere in the world that has internet access. Hence, answers from subjects from a single country or gender would only allow a narrower analysis.

The approach of the purposive sampling was based on maximum variation sampling. This was used to ensure a wide range of different subjects selected (Bryman, 2012, p.418). This was done since the aim was to understand if different nationalities perceived the study topic in different ways or if there was a common feeling throughout them, independently of their national background. Hence, the data collection aimed for a wide variation of nationalities.

To supplement the sampling method, convenience sampling was also used. As Berg and Lune (2017, p.38) explain, “this category of sample relies on available subjects—those who are close at hand or easily accessible”. Free Rice website does not provide any forums in which the players could interact or that the survey could be uploaded. Hence, the study had to resort to alternative channels to reach the subjects for the data collection. The subjects were selected via Twitter, that is the platform they are most active. To specifically find them, a search looking for “freerice” mentions were made and then the subjects were approached.

3.2. Data collection methods

The chosen data collection method was qualitative questionnaire, since this emphasizes the importance of the subjects point of view (Bryman, 2012, p.470). For the interviews, an interview guide was developed (Appendix II) with a mix of close-ended – to understand their gaming habits – and open-ended questions – to capture the interviewees points of view about Free Rice. Since the present study is interested in

understanding the units' points of view, a bigger focus is given to the open-ended questions.

According to Bryman (2012), there are several types of qualitative questionnaires. However, because the study used surveys, a self-completion questionnaire was the most appropriate way to conduct the data collection. Even though a standardized survey does not provide room for follow up questions and further investigation – compared to a semi-structured interview –, it “reduces error due to variation in the asking of questions, and greater accuracy in and ease of processing respondents' answers” (Bryman, 2012, p.210).

To establish rapport, Babbie (2010, p.317) suggests that the “purpose of the research should be explained in a non-threatening way; and that the interviewer should say that he/she is there to learn and understand more about the subjects' thoughts and point of view”. Even though the data collection process was carried on via survey with no interviewer to ask the questions, the subjects were approached one by one. On this procedure, there was a previous chat with the individuals explaining to them individually what was the research about and what the survey expected from the subjects – to learn more about their experience with the game. After explaining it, the researcher asked if the units wanted to take part in the survey and in case the answer was affirmative, a link to the form was sent over to them.

This leads to the importance of getting the consent of the subjects interviewed. For this study, it was used implied consent and the guidelines given by Berg & Lune were followed. In the beginning of the surveys, it was stated that the interviewees would remain anonymous and the objective of the study as well as what was expected of them was fully explained. As Berg and Lune explain, “affirmative responses and completed interviews serve the purpose of implying consent in the absence of a signed consent slip” (Berg and Lune 2017, p.46).

3.3. Data management and analysis method

According to Berg & Lune (2017), content analysis is a way to reduce, interpret, and to find patterns in all of the data gathered throughout the collection phase. It helps to understand and create meaning over the data. To analyze the survey responses, it was chosen the interpretative approach. “This orientation allows researchers to treat social action and human activity as text. In other words, human action can be seen as a collection of symbols expressing layers of meaning” (Berg & Lune, 2017, p.182-183).

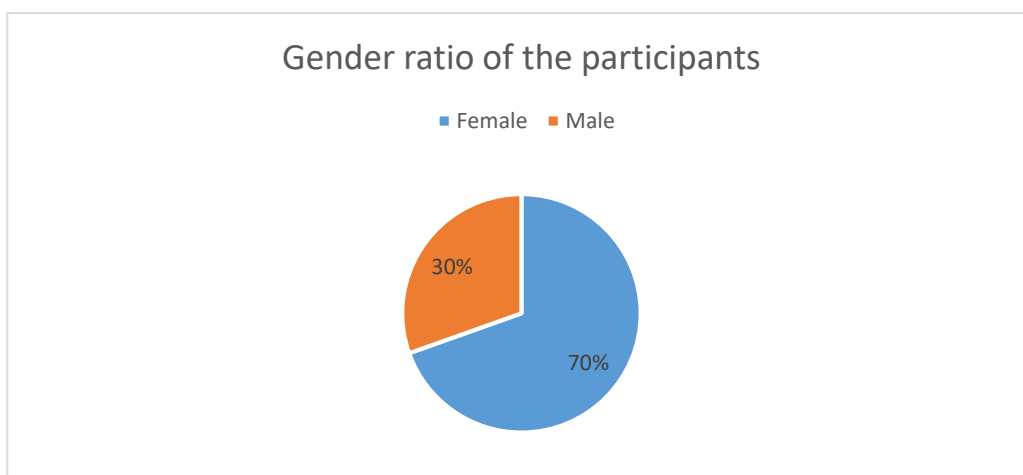
The approach carried out for the coding of the data was thematic analysis. “The idea is to construct an index of central themes and subthemes, which are then represented in a matrix” (Bryman, 2012, p.579). The themes were created on a basis of the repetition of certain categories throughout the varied responses and based on similarities and differences between how the subjects perceive the topic of discussion.

4. Results

The research analyzed the responses of 23 different subjects. This chapter first presents the results that shows the participants’ background. Then, it analyses the players’ experience according to their responses. This sub-heading is divided into different sections that help to segment the replies given in the surveys according to its themes of analysis. In order, it presents the main reasons why people play Free Rice; how people feel like when play it; the participants’ perception of challenge in Free Rice; the learning outcomes of playing Free Rice; and how the game can still improve taking into account the users suggestions. The last subheading of the chapter presents how the game connects and affects the real world through the players. It shows the different activities the interviewees already perform in real life to make a change; how Free Rice inspires – or not – people to go beyond the game; and how people feel about their contributions to fight hunger.

4.1. Participant’s background

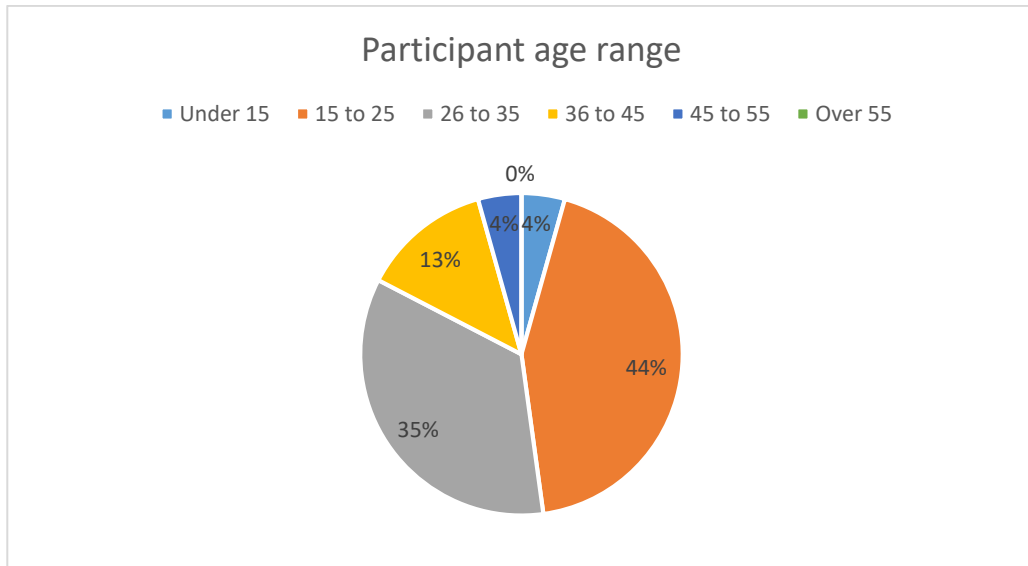
Graphic 2 shows the gender ratio of the participants: 70% of the ones who took the survey were females and 30% were males.



Graphic 2: Participant’s gender ratio.

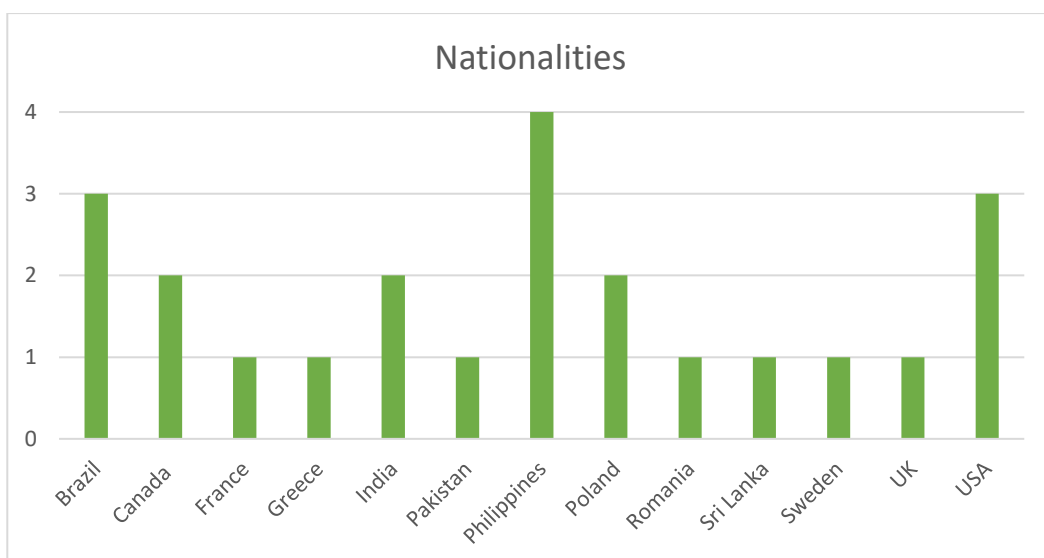
Graphic 3 demonstrates the age range of the participants. The most dominant range is relatively young, going from 15 to 25 years old (equivalent for 44% of the

respondents). The second most representative range is from 26 to 35 years old, with 35% of responses. It is interesting to highlight that, even though not dominant, there is the presence of older age range: from 36 to 45 (13%) and 46 to 55 (4%). The youngest range represented 4% of the replies and the oldest range had no representation.



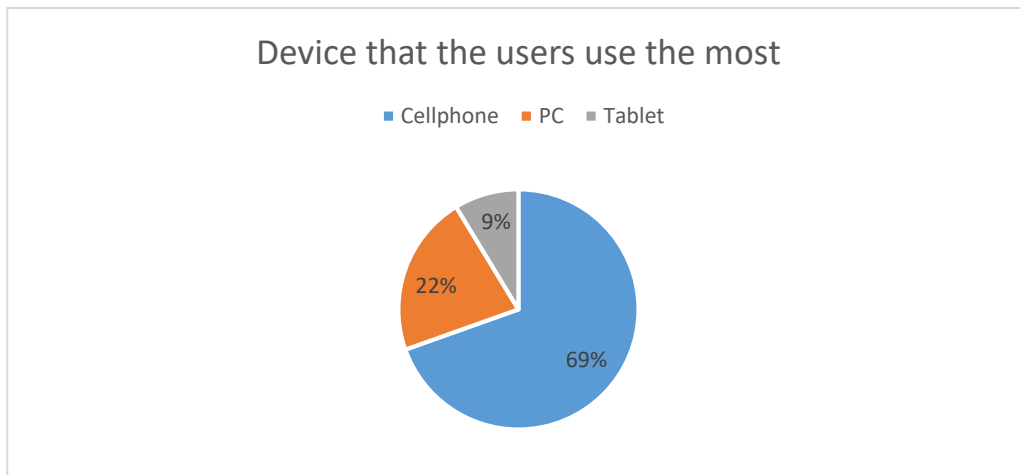
Graphic 3: Participant age range.

The origin of the participants (Graphic 4) was very diverse and accounted for 13 different nationalities. The distribution among developing and developed nations is almost equal between them: 52% come from developing countries and 48% from developed ones.



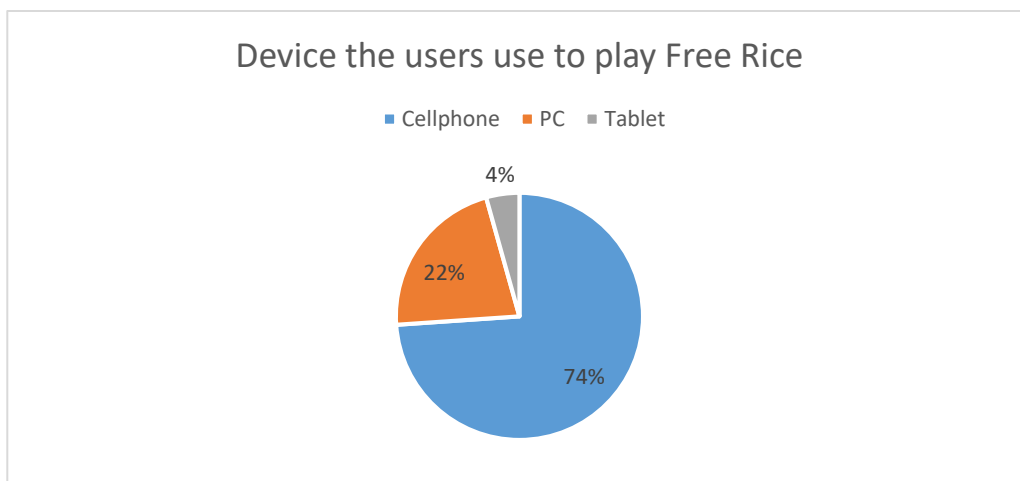
Graphic 4: Nationalities registered by the players.

The device that the subjects use the most on their daily life (graphic 5) is the cellphone (69%), followed by PCs (22%) and tablets (9%).



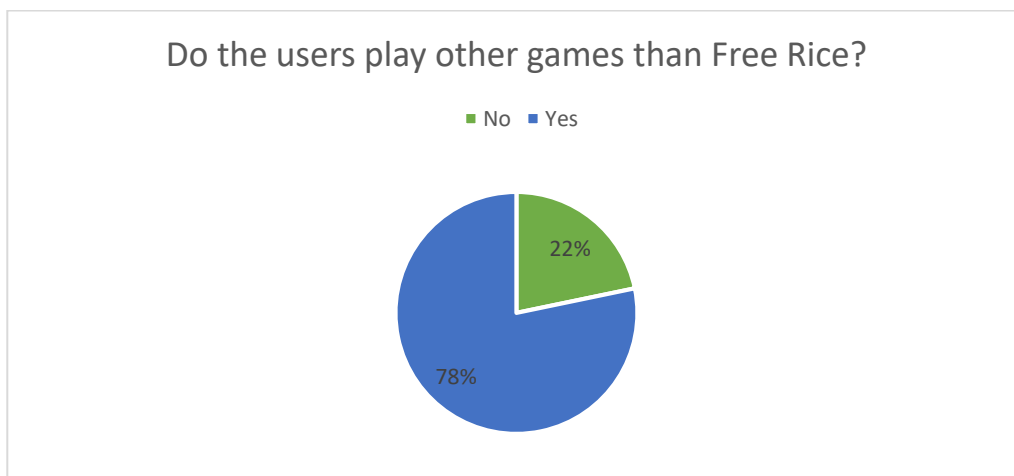
Graphic 5: Device that the players use the most on their daily life.

When it comes to the device, the users use the most to play Free Rice (graphic 6) the trend is the same. However, cellphone is even more dominant then, with 74% of representativity; followed by PCs again, with 22% and tablets with 4%.



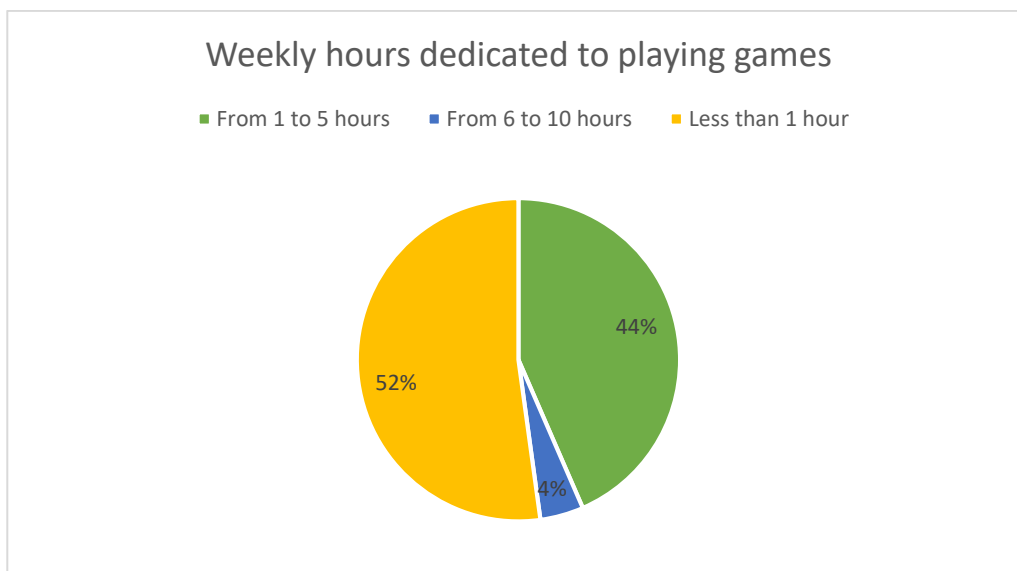
Graphic 6: Device that the players use the most to play Free Rice.

Most of the respondents – 78% – play other games than Free Rice (graphic 7).



Graphic 7: Do the interviewees play other games than Free Rice?

However, even if most of them play other games, 52% seem to be casual players, since they play less than an hour a week (graphic 8). 44% are moderate players who dedicate from 1 to 5 hours a week to games and only 4% play from 6 to 10 hours. There were no responses marking over 10 hours of gaming a week.



Graphic 8: Weekly hours the players interviewed dedicate to playing games in general.

4.2. Player experience

4.2.1. Main reasons why the participants enjoy playing Free Rice

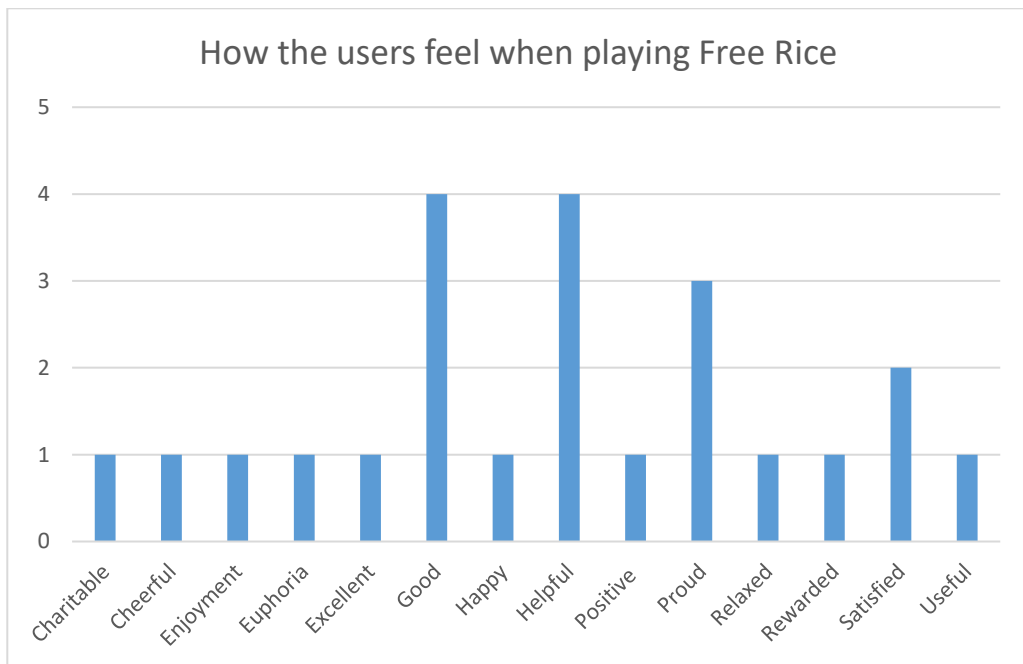
Table 2 compiles the answers of three different questions. It separates the main and secondary reasons – why the subjects play Free Rice – and the most liked feature of the game into recurrent categories identified by the thematic analysis. Some of the reasons overlap into other categories. Hence, to have a more complete analysis, either the full quote or part of it will be repeated when applying to other category. Through the analysis, seven main categories were identified to explain why people play Free Rice game, they are: because of the possibility of free donations, to help other people, to fight hunger, to raise awareness, because of the purpose, because it is fun, because it is educational and because of the group’s competition. Among the main reasons the categories related to the hunger cause (first five) were the most recurrent, with a particular highlight to “help people”. On the secondary reasons, the most recurrent were mostly related to other features than “helping” (three last). The educational element was the most cited by the units as the secondary element that makes them play the game. When asking about the most liked feature of the game, categories from both groups were mentioned, with a particular emphasis to “free donations”, “helping people” and “educational”.

Reasons why people play Free Rice			
	Main	Secondary	Most liked feature
Free donation	<ul style="list-style-type: none"> • "Because it is a free donation" • "As a student, it's hard to find ways to donate without costing too much. Freerice is a perfect app for that. It doesn't require any amount of money, just play and you could easily help." • "I haven't got much money so it's a free way to donate to charity" • "The fact that it helps us donate just by playing simple games!" 	<ul style="list-style-type: none"> • "Great that it costs no money!" 	<ul style="list-style-type: none"> • "It is an easy way to donate" • "Free donation to charity" • "It's a way to donate without needing money" • "The idea that you can help and donate without needing any money"
Help people	<ul style="list-style-type: none"> • "I play Freerice because I want people to have more food, to change their lives" • "Love helping people as much as possible" • "To help people in need" • "I want to help others in need" • "Because it does good to others, while I still get to activate my brain and have fun!" • "So that I can help others in any way I can while sitting at home. I'm not at an age where I can earn myself so by playing freerice and donating grains of rice to UN WFP, I feel like I'm helping in at least one way" 	<ul style="list-style-type: none"> • "It is a good alternative way to help" 	<ul style="list-style-type: none"> • "That it's a free game that helps people" • "The fact that you can help through using your mind and learning... it's pretty incredible" • "Being able to help people in need" • "It helps people in need" • "That I'm helping someone"
Fight hunger	<ul style="list-style-type: none"> • "Helping to overcome hunger" • "It is a good way to help fight hunger even though it is not a physical help" 		
Raise awareness	<ul style="list-style-type: none"> • "To help raise money and awareness" • "To raise awareness about hunger" 		
Purpose	<ul style="list-style-type: none"> • "I continue playing Freerice because of its purpose. One can help stop hunger just by playing a game, without needing any money." • "It's for a good cause" 		<ul style="list-style-type: none"> • "The cause"
Fun		<ul style="list-style-type: none"> • "It is entertaining" • "It's fun" (x3) 	<ul style="list-style-type: none"> • "Educational and fun" • "It's fun"
Educational		<ul style="list-style-type: none"> • "Learning a new language" • "It is a game that improves my knowledge" • "It's helpful for students like me, it gives me access to wide variety of lessons and knowledge" • "I want develop my knowledge mainly the language skills" • "I get to learn new words and improve my knowledge in different areas" • "I'm learning English vocabulary" • "I can practice English" • "I can learn while helping people" • "It is educational and informative" • "It's actually educational. Improving my English vocabulary and grammar" 	<ul style="list-style-type: none"> • "It makes me think" • "I can learn more English words, English language" • "Educational and fun" • "The fact that you can help through using your mind and learning... it's pretty incredible" • "It is a good game to learn new a language"
Group's competition		<ul style="list-style-type: none"> • "I'm helping donate in my group's name" • "I am part of a group, so it is cool to compete against the other groups" • "Because the group I am part on the game creates fun narratives on twitter to play" • "I want to contribute to the scores of my group" • "So that I can help the Pakistani group in the app chart higher and let our presence be known" 	

Table 2: Matrix showing main reasons, secondary reasons and most liked feature on Free Rice and the different thematic categories it connects to. This was structured based on the players' experience.

4.2.2. How the participants feel like when playing Free Rice

Graphic 9 demonstrates the one-word feeling the users chose to describe how they feel like when playing Free Rice. 14 words were listed in total: charitable, cheerful, enjoyment, euphoria, excellent, good, happy, helpful, positive, proud, relaxed, rewarded, satisfied and useful. Amid them, the most cited ones were “good”, “helpful” and “proud”. One thing all of the 14 have in common is that they relate to positive feelings.



Graphic 9: One-word feeling chosen by the players to describe their feeling when playing Free Rice.

Table 3 connects the long answers about how the users feel when playing Free Rice, to secondary feelings that could be identified in them. By thematic analysis, 7 categories of secondary feelings were identified: good, relaxed, meaningful, helpful, happy, competitive and engaged. Among those, “good”, “meaningful” and “helpful” were the most mentioned as justifications.

		Reference to other feelings						
		Good	Relaxed	Meaningful	Helpful	Happy	Competitive	Engaged
User's One-word Feeling	Useful	X						

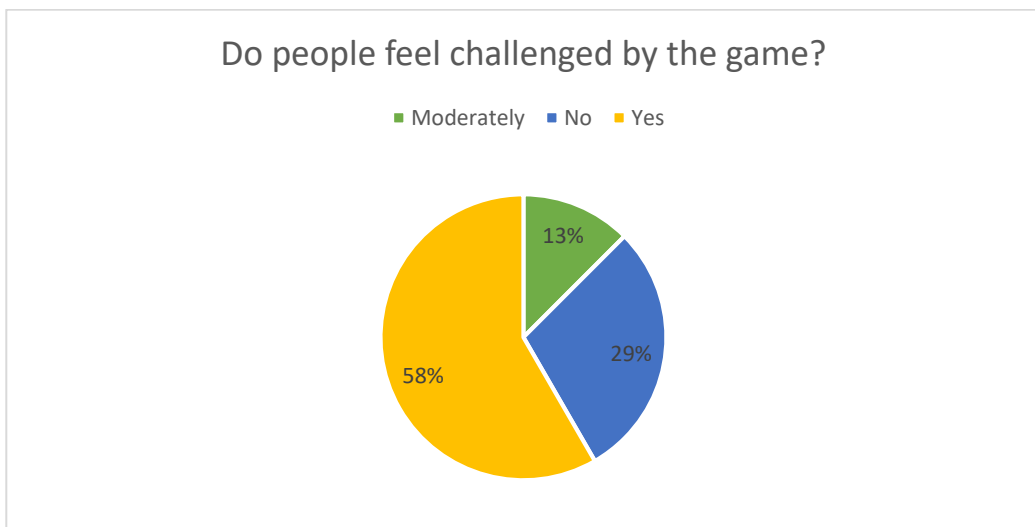
		the free rice then if I have time I challenge myself to learn the other stuff".							
	Good	• "I feel good , I can relax and don't feel pressure"		X					
		• "I feel good , like I am doing something that matters "			X				
		• "I feel happy that I can help people in need "					X		
	Positive	• " Good , like I'm doing something worthwhile "	X		X				
	Helpful	• " Good but sometimes a little dumb (I am really bad with <u>geography</u>)"	X						
		• "I feel like people can make true contributions to the world if we actually try"			X				
		• "I just feel good in general, it's good for learning and for helping . It's a nice thing to do"	X				X		
		• "It's good to know I'm helping other people in need. I feel like somehow my effort is important to someone. It's like I'm working for a positive change in the world"				X			
	Satisfaction	• "When the rice plate fill I feel really happy "					X		
		• "I'm glad that there is a way where I could donate without having much hassle. It's also a fun app to use"							
	Proud	• "I feel proud of the rices I donate"							

		• "I feel like I can contribute to a great cause"				X			
	Charitable	• "Charitable because I can donate and help a cause"					X		
	Happy	• "Pleasantly competitive"						X	
	Rewarding	• "I feel good that the time I'm spending playing this game would be beneficial for those who are suffering from hunger"				X			
	Excellent	• "It's so good to feel that I can help to end world's hunger"					X		
	Euphoria	• "I feel happy"						X	
	Cheerful	• "I love quizzes so I'm always having fun"							
	Enjoyment	• "It's pretty engaging and interesting"							X
	Relaxed	• "Relaxed"							

Table 3: Matrix connecting users feelings justifications, to reference to other feelings in their speeches.

4.2.3. Participants' perception of challenge in Free Rice

When the users were asked if they feel challenged by the game, the opinions were divided between “yes” (58%), “no” (29%) and “moderately” (13%) (graphic 10).



Graphic 10: Graphic that shows if the players feel challenged by Free Rice.

Table 4 presents the user’s rationalization linked to the categories that represent their position. The players that replied “yes” mostly link the challenge of the game to the quizzes’ subject or/and their learning outcome. Players who replied “no”, attributed the lack of challenge to the simplicity of the game. Finally, players that said the game is moderately challenging, mostly linked it to the game levels: the higher the level of the game, more difficult it gets.

	Yes	No	Moderately
Subject related/ learning outcome	<ul style="list-style-type: none"> • "I don't know much about geography, it helps me" • "It contains lessons that I haven't encountered or studied before" • "There are lots of words I don't know" • "I learn new things" • "There are questions that really challenge my knowledge on different subjects" • "It taught me a lot" • "When I get an answer wrong, I try to keep in mind the correct answer because I know that the question will repeat, so that I can get it right the next time" • "Helps me to learn English vocabulary" • "There are so many things I don't know that i get to learn" 		<ul style="list-style-type: none"> • "It depends on the subject"
Levels	<ul style="list-style-type: none"> • "It gets harder and harder" • "The harder it gets the more I learn!" 		<ul style="list-style-type: none"> • "The higher levels is where I'm really learning new vocab I hadn't practiced before" • "It can get hard when I get to higher levels"
Self challenge	<ul style="list-style-type: none"> • "I always try to reach higher amount of rice donated than I did in a the previous game, but it is really hard" • "I challenge myself to learn and to compete with my friends" 		
Simplicity	<ul style="list-style-type: none"> • "Looks simple but difficult to master" 	<ul style="list-style-type: none"> • "It's a fairly simple game" • "It's pretty simple to use" 	

Table 4: Matrix analyzing the reasons why Free Rice is challenging or not.

4.2.4. Participants’ perception of learning outcome when playing Free Rice

A hundred percent of the players agreed that playing Free Rice has helped them to learn and improve their knowledge on a certain subject. Table 5 sorts the subjects’ explanations about how Free Rice helped them to learn a new subject into five categories: language learning, geography, content of the quizzes (meaning that the content is good and challenging), general learning and feedback (attributing the learning outcome to the instant feedback that the game provides). Based on the answers, it is possible to notice

that most of the players play the game focused on language learning and to expand their language vocabulary.

	Justification
Languages	<ul style="list-style-type: none"> • "Some words in other languages" • "Helped me practice French and some English vocabulary for the GREs" • "Learned more English Grammar" • "I am trying to play the vocabulary of the languages I have never learnt" • "My vocabulary expanded" • "I am learning new words" • "Being a non-English speaker this game helps me to improve my vocabulary and grammar" • "Enhanced my vocabulary" • "Improved my English language skills" • "I've got to learn new English vocabulary words and it will help me later on because English is my second language"
Geography	<ul style="list-style-type: none"> • "Helped me to learn more about geography" • "I have learned capitals and countries of the world" • "I have also learned the names of a few country flags that I previously couldn't recognize"
Content of quizzes	<ul style="list-style-type: none"> • "The quizzes provide good content" • "The quizzes challenge my knowledge" • "The subjects are a bit challenging"
Feedback	<ul style="list-style-type: none"> • "if I give wrong answer it show the correct one which helps me" • "Since the questions repeated itself giving me a chance to learn the right answer"
General learning	<ul style="list-style-type: none"> • "I've realized what I need to study more in subjects I thought I was really good at" • "Because it helps me to learn and explore new things, as well as refresh my past learnings and knowledge"

Table 5: Matrix analyzing the learning outcome of the players according to their answers.

4.2.5. Different ways Free Rice can improve

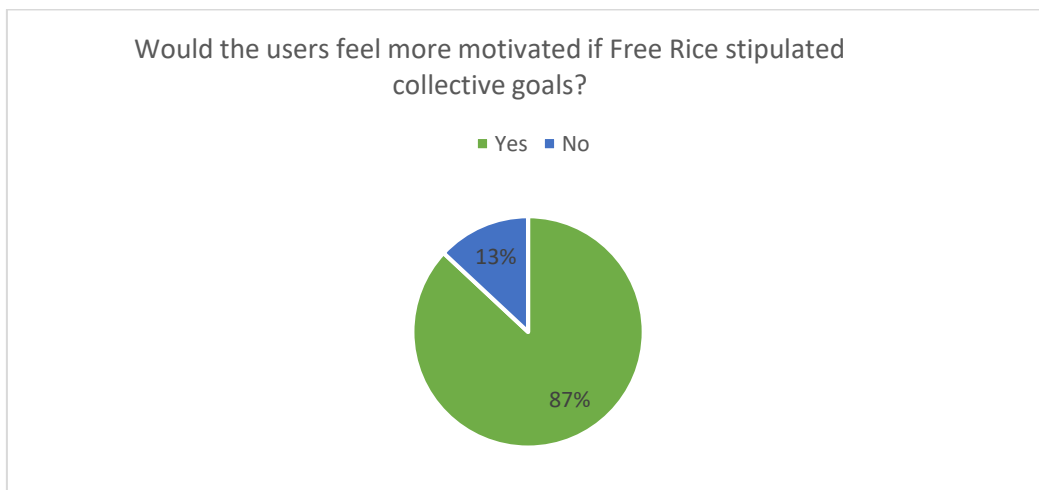
On an attempt to understand what could make the game more engaging, the survey asked what suggestions the subjects had to improve the game. The players came up with a very diverse set of suggestions that were divided and classified into 6 bigger categories (table 6): extra categories (disaggregated into “history”, “language” and “other”), accessibility (disaggregated into “translation” and “offline option”), donation bonus, social interaction, narrative and competition. In general, the players suggested more categories. However, there is a clear concern about the accessibility of the game, as the players want it to be accessible to most people possible, so other people – who do not know English so well or do not have internet connection – can also contribute. Donation bonus for bigger achievements or for higher levels were mentioned more than once. Social interaction also seems to be an element that lack in the game according to the subjects.

	Suggestions	
Extra Cate	History	• "Add world history section"
	Languages	• "It would be cool if it had other languages "

	Other	<ul style="list-style-type: none"> • "Add brain teasers" • "More categories" (x2) • "A mixed category"
Accessibility	Translation	<ul style="list-style-type: none"> • "Translate the game to other languages to make it more accessible to people who don't know English that well, but still want to help" • "If they could provide other languages for the app, so other people that are not fluent with English can use it too"
	Offline option	• "If they could make the game offline . Because internet connection is not always available for some people "
	Donation bonus	<ul style="list-style-type: none"> • "Harder questions may be fun! Maybe to donate more if you choose to go that route" • "The only thing that comes to my mind is some bonus points for biggest achievements (and more free rice at this point)"
	Social interaction	<ul style="list-style-type: none"> • "I would like the game becomes more social. For example there is possible to join the groups but we can't communicate with each other" • "To be able to interact with other players from the community"
	Narrative	• "A story line "
	Competition	• "It would be awesome if I could play it with a partner or an anonymous player where we both get the same questions and whoever answers the earliest and correct gets the higher score "

Table 6: Matrix sorting by category the suggestions players gave on how Free Rice could improve the user experience.

Even though the set of suggestions were diverse, none of the players mentioned the lack of minor milestones or collectives goals as a problem or as something that the game could improve. When asked if the stipulation of collective goals by Free Rice would motivate the players more to work harder to donate, 87% replied “yes” and 13% said “no” (graphic 11).



Graphic 11: Would the users feel more motivated if Free Rice stipulated collective goals?

Not all of the players provided further explanation about their position, but some who said “yes” mentioned that a monthly goal could “make the community more active”;

that the bigger goals would be interesting “mainly if they could talk to group members” and that “it is easier to achieve something if you set your goals” (table 7).

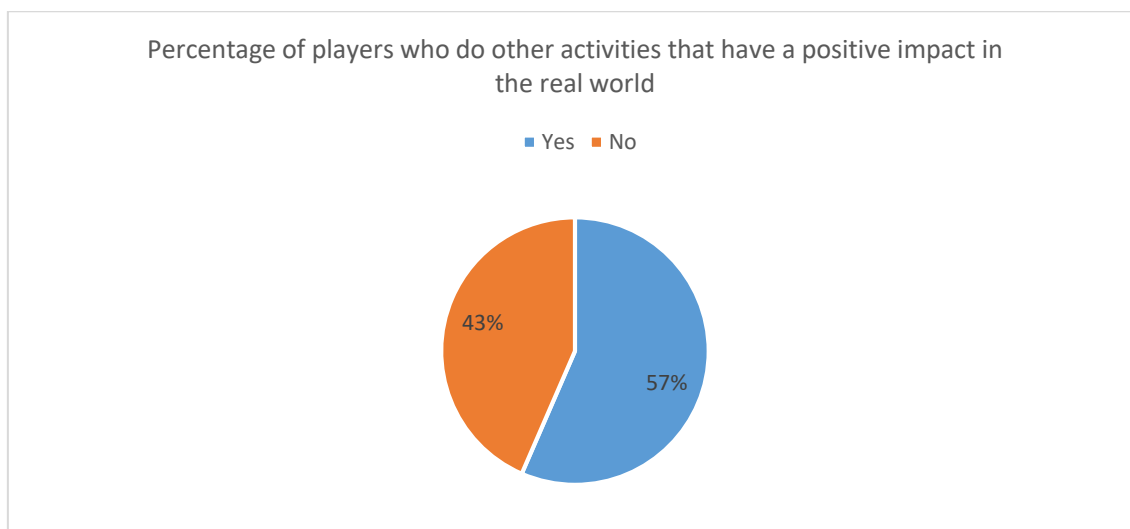
Highlights about lack of goals
"It would be interesting if there was a monthly goal to make the community more active"
"I feel there's a lack of minor goals for the players"
"Yes, mainly if I could talk to my group members"
"It is easier to achieve something if you already set your goals"

Table 7: Highlights of users answers about the lack of goal on Free Rice.

4.3. From the screens to the real world

4.3.1. Actions with positive impact in the real world that participants do

When the players were asked if they perform activities in the real world that results into a positive impact, 57% said “yes” and 43% said “no” (graphic 12). The intention here was to understand if there is a previous engagement and concern of the players to contribute to real changes with efforts taken in the real world. Some of the players seem to be more engaged than others as they perform more than one action.



Graphic 12: Percentage of players who do other activities with positive impact in real life.

Table 8 shows 10 different activities listed by the subjects: volunteering in different projects and charities; recycling and upcycling material that would go to waste; monetary donations to charities; minimization of the use of plastic; planting trees; animal adoption (instead of buying); clothes donation to charities or institutions; provision of meals to hungry kids; psychotherapy for kids who need help. Among those, volunteering is the one that has the highest rate of participation.

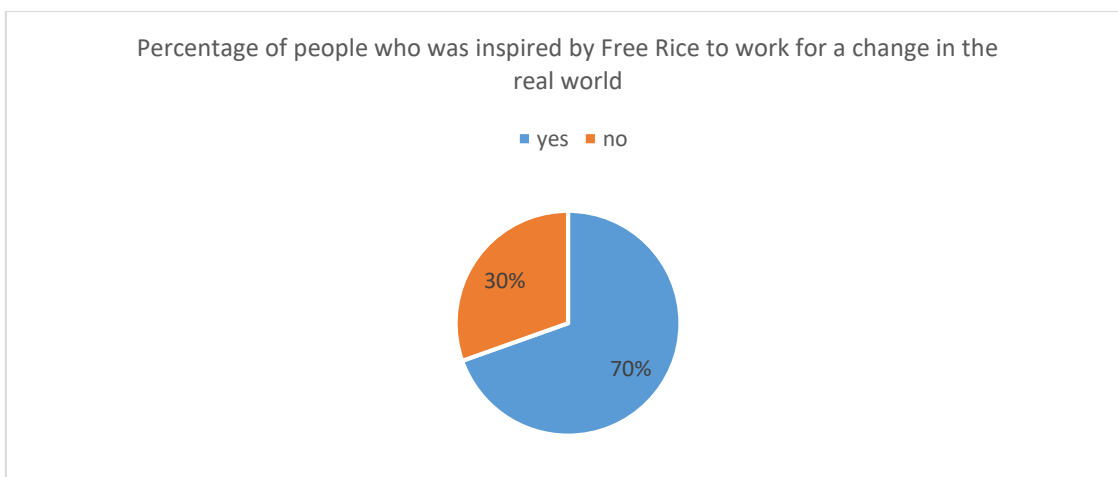
Activity	Count
Recycles/Upcycles	2
Volunteers	5

Monetary donations for charities	2
Minimizes use of plastic	1
Plants trees	1
Adopted an animal (instead of buying)	2
Donates clothes for charity	1
Psychotherapist to help kids	1
Buys meal for hungry kids	1

Table 8: Table showing the count of real life activities with positive impact that the players do.

4.3.2. How Free Rice inspire its players to go beyond the game and take action

Free Rice seemed to inspire 70% of the players to work for a change in the real world, while 30% (Graphic 13) did not feel that way. From the results, it is possible to notice a gap between the people who already do some action and the people that feel inspired, as 27% feel inspired but are not yet taking action. However, the subjects that do not take action yet express the desire of start volunteering or donating to charities when their financial situation allows, for example.



Graphic 13: Percentage of players who felt inspired by Free Rice to act for a change in the real world.

Table 9 provides a thorough overview of how Free Rice inspires them to work for a positive impact in the real world. Among the trends identified are: food waste reduction, will to help others more on a daily basis, will to make monetary donations, will to volunteer, actions empowerment (making the subjects realize small actions matter) and meal provision to people in need. Among those, “donations” was the category that had most mentions.

Category	How the players feel inspired
Food waste reduction	• "I try to make sure food waste at home is minimal"

Help others more (daily basis)	<ul style="list-style-type: none"> • "It encourages me to go an extra mile in helping others. It reminds me that I could still make a change, even just by doing simple things" • "It makes me want to help more people on my daily life"
Donations	<ul style="list-style-type: none"> • "It makes me want to donate more and help different causes. When I have more money I would like to donate more consistently" • "I'm already a pretty charitable person (as I make monetary donations to charity) hence Freerice for me was a boost" • "I donate more frequently to food related charities"
Volunteering	<ul style="list-style-type: none"> • "By volunteering to another environmental project" • "When the quarantine is over I would like to volunteer in some social project"
Empowerment	<ul style="list-style-type: none"> • "I feel like my individual actions can have a good impact" • "I feel empowered. Makes me want to help people the way I can"
Meal provision	<ul style="list-style-type: none"> • "It has made me more aware of hunger and I try to help when I can, like buying a meal for a hungry kid when I am out (when I have money to spare)"

Table 9: Matrix sorting the players' answers in categories about how they feel inspired to act for a real change in the world.

4.3.3. How participants perceive their contribution in Free Rice in relation to hunger reduction

All of the participants replied “yes” when asked if they felt their efforts contributed to reduce hunger. Table 10 classifies their rationales in six different categories: trust on the organization, the importance of small efforts, collective efforts are strong summed up, the importance to provide food for people in need, the possibility to donate for free and “other”. In this last category, the person thinks their efforts help to reduce hunger, but suggests that would be good if the WFP provided a results report specifically for the Free Rice. The category most highlighted by the subjects was the importance of small efforts.

	Reasons why they believe their efforts contribute to reduce hunger
Trust on the organization	<ul style="list-style-type: none"> • "I trust they app makers. I believe the UN/WFP delivers the food to whoever is hungry and needs it" • "Because it's an internationally recognized organization" • "Mainly because it is managed by the WFP, I trust that the food gets to the people in need"
Small efforts matter	<ul style="list-style-type: none"> • "In a small way" • "Even if a little" • "I hope so, at least in a small way" • "Even if it is a small donation, I feel that I am contributing" • "I can see how much I can donate and that is cool. Even if little" • "Every bit of contributions helps" • "I love the idea that I am helping a great cause. My donations might not be that much, but I hope they matter" • "Because even if it's a small help, it's better than nothing" • "I feel like at least I'm doing something" • "Because I believe that every grain of rice donated is helping to save one life. Even on a small scale, every grain has an impact"

Collective effort	<ul style="list-style-type: none"> • "My way of playing this game may be small but through the collective efforts of other people who are also playing this game, together we are helping fight hunger" • "I think every donation matters and with small efforts summed up we can do good"
Important to provide food to who needs	<ul style="list-style-type: none"> • "Because I think it could really help to provide people something to eat, considering that Rice is a staple food for many countries" • "Because it donates food to people who need it"
Free donation	<ul style="list-style-type: none"> • "It makes me glad I can donate even not having money. I just donate my time and I feel I can help, even if the donation is small"
Other	<ul style="list-style-type: none"> • "Of course! Although a generated report would be nice"

Table 10: Matrix sorting in categories the reasons the Free Rice players believe their in game efforts contribute to reduce hunger.

5. Discussion

This chapter aims to discuss the findings presented in the Results section. The first section discusses how Free Rice brings a sense of purpose to its players based on the evidence of: the main and secondary reasons why the participants play the game; the players feelings; and learning outcomes. The second section examines if it is possible to believe that flow is present on Free Rice and how engaging the game is mostly based on the participants described feelings; learning outcomes; and analyzing the games goal. Then the chapter discusses how Free Rice can still improve using the players suggestions and the inputs about the possibility of collective smaller goals. The fourth sub section debates if it is possible to say that Free Rice leads to a real world impact as well and – if so – how. The considerations are based on the participants reported activities in the real world; how or if Free Rice inspires them to act for a change; and how the players feel about their contributions to fight hunger. This section’s sub-heading further analyses how Free Rice translates the in game results into real life impact in the fields. It also debates its main goal – to eradicate hunger – in light of the theories and policies previously presented. The last section makes final considerations about the game highlighting its boundaries.

5.1. Playing with purpose

Even though the age range of 15 to 25 years old is dominant in the research, the results showed that there is also a considerable engagement throughout older age ranges. This demonstrates that games are no longer an activity aimed at kids, but that it has spread throughout all age ranges (Newzoo, 2017). Moreover, it shows that not only younger people are interested and engaged in the fight against hunger. Free Rice provides an

opportunity for people of all ages and from all places – with internet connection – to help achieve SDG 2 – zero hunger.

In fact, the main reasons why people play Free Rice are all linked to helping/donating for a cause or help people in need/hungry. Through the main and secondary reasons statements, it is possible to see that Free Rice relates directly to Koster's (2004) and Schell's (2008) definitions for games. As previously explained, to Koster games are a fun way to learn and to solve problems (2004, p.54). On the other hand, to Schell games are "a problem solving activity approached with a playful attitude" (2008, p.36). While playing the game on its own will not solve hunger, the users do see it as a tool to help on the fight as it is a way to donate freely. The possibility to donate without necessarily needing money is a huge attractive to the players, since not everyone has the money to often donate. According to the players own words, "It doesn't require any amount of money, just play and you could easily help" or "I haven't got much money so it's a free way to donate to charity". Mainly for younger age ranges that do not have a stable income, as students, this is an especially attractive feature. This also makes the process of engaging in the cause more inclusive as in the humanitarian sector the provision of money and aid is left to the big institutions and organizations.

The feelings associated with playing Free Rice were all positive. Words as "helpful", "proud", "satisfied", "useful", "charitable" and "rewarded" can indicate that the game generates a feeling of purpose in the players. It is as their individual actions matter in a bigger picture. Through their in-game work, the players might feel that their efforts are important as it contributes to real impact in the world. This can be different from making a money donation because then there is no work, effort or donation of time involved in the process. When asked if they feel like their efforts contribute reducing hunger, a user mentions the donation of their time: "I just donate my time and I feel I can help" (table 10).

Free Rice's broad goal to achieve zero hunger – that could have been a problem to players' motivation – seems to be the very reason that creates a sense of purpose in them. The fight against hunger, even if it is a bold objective, is what creates the feeling in the players that they are working for something bigger than their own lives. They feel like they are helping other people, as illustrated by some players quotes: "I continue playing Freerice because of its purpose. One can help stop hunger just by playing a game, without needing any money", "I play Freerice because I want people to have more food" or "I want to help others in need" (for more see table 2). As previously explained by

McGonigal (2011, p.97), games can create a sense of purpose, even if the work in game itself is not directly connected to a concrete result. Free Rice does have concrete results, but not through the players' actions.

However, the users' collective efforts are a fundamental part of the process, as the money raised is important to fund extra projects detached from donors' interests and specifications (Hoeffler and Outram, 2011). Seligman (1991, p, 247) explained the feeling of purpose can be triggered when individual actions are important on a bigger scale than the self is. The bigger the institution people attach their efforts to, the more important their individual efforts feel. Free Rice is ran by the WFP, the organization not only manages the game, but also is responsible to plan and operate all of the aid actions. The fact that the WFP is responsible for the game can also contribute to enhance the sense of purpose in the players, as it is an internationally recognized and credible organization. In fact, to contribute to that assumption, some players do mention their trust on their organization when asked if they think their efforts contribute to the reduction of hunger: "I trust the app makers. I believe the UN/WFP delivers the food to whoever is hungry and needs it", "Because it's an internationally recognized organization", "Mainly because it is managed by the WFP, I trust that the food gets to the people in need" (table 10).

Free Rice's compromise to be meaningful and create positive change goes beyond food aid, as it is structured as a quiz to help people learn different subjects. It provides an alternative source of education that is free to all. In fact, the results showed that the secondary main reason why people play the game is educational. To contribute to that, subjects who have taken the subject and that education as their secondary reason said "It's helpful for students like me, it gives me access to wide variety of lessons and knowledge", "I get to learn new words and improve my knowledge in different areas" or "I can learn while helping people" (for more see table 2). This emphasizes even more, why the platform is under the category of "games for change".

On top of that, to enforce the evidence that Free Rice is in fact educative, 100% of the players have reported that they did learn something new or improved their knowledge while in the game. Even though it presents a vast set of categories, the players seem to use more the languages section – in special English – and geography. The players stated "being a non-English speaker, this game helps me to improve my vocabulary and grammar" and "[it] helped me to learn more about geography" (table 5). In addition, the players also attribute their learning outcome to the feedback system: "if I give wrong answer it show the correct one which helps me" (table 10). This is a good example of an

effective use of feedback – which lacks in real life, according to McGonigal (2011). In this case, it keeps the players engaged, motivated and helps on their self-development.

5.2. Flow

The positive feelings mentioned by the players can also be linked to a flow state. According to Csíkszentmihályi (1975, p.4) flow is a state of deep focus in which the actions performed then are satisfying and rewarding. The sense of being “proud”, “satisfied”, “rewarded” and feeling “good” or “excellent” are evidence that Free Rice generates intrinsic rewards and self-satisfaction in the users.

A feature that contributes to this state is the constant feedback present in the game. Free Rice provides different kinds of feedbacks that can contribute to the flow. Just after submitting their answers, the players get to know if they got it right or wrong. In addition, in case it was wrong, the game shows the right option to the user. This feature is also extremely helpful in the learning process (which is explored further in the discussion). The other feedback feature is the visualization of the amount of rice donated. One of the players mentions this as an important feature that makes him feel like his efforts are meaningful for hunger reduction: “I can see how much I can donate and that is cool” (table 10). Through his reply it is possible to understand that the visual stimuli is responsible to make a connection between the virtual and the real. Through the bowl of rice images, the players get the idea that their virtual efforts will result in something real and that will help someone in need.

The level of challenge – another important feature to achieve flow (Csíkszentmihályi, 1990, p.49) – presented by Free Rice is a controversial subject that divided the players’ opinions. To 58% of them there is a good balance in the level of challenge presented by the game. This is important not only to keep their engagement but also to help on their learning outcome. Most of the players who said that the game is challenging connected it to how the game was able to teach them new things: “I learn new things”, “There are questions that really challenge my knowledge on different subjects” or “It taught me a lot” (for more check table 4). However, 29% of the players think the game offers no challenge due to the simplicity of its mechanics. This could hinder the achievement of the flow state to those users who think Free Rice is not challenging, hence, boring. Even if they still play because they want to help and contribute to hunger reduction – as all of the reasons stated for playing the game were somehow connected to that – for those players, the act of playing Free Rice might not be as effortless or fun if compared to the players.

Another valuable element to achieve flow is to establish clear objectives (Csíkszentmihályi, 1990, p.49). While Free Rice goal is clear – to fight and eradicate hunger – it does not set smaller goals or milestones for the players to achieve. However, when asked to make suggestions for the improvement of the game, no one mentions the implementation of minor goals. On the other hand, the vast majority – 87% – agrees that the presence of collective smaller goals would boost their motivation to play and contribute more (graphic 11). One of the users mentions that it would be beneficial to the community and make it more active: “It would be interesting if there was a monthly goal to make the community more active” (table 7)”. The utilization of monthly goals for example, is an interesting way to tangibilize the achievements. It could provide more direction to the collective efforts and motivate the players to put on an extra effort to donate more and, hence, help more people.

5.3. There is still space for improvement

The deficiencies or points for improvement in Free Rice’s mechanics are exposed through the player’s suggestions. An interesting discussion raised in the players’ responses was the accessibility matter (table 6). They suggested that the game should be offered in different kinds of translations and possibly have an offline more. The game website and app is only offered in English and it only works with internet connection. This limits game participation to those who already speak some English and who have access to internet. would ensure that the game reaches as many people as possible, as a lot of people do not speak Those suggestions could be a way to disseminate the game and allow more people to join. What is interesting to note is that the own players are aware and interested that the game is made available to more people, so more people could join in the efforts to fight hunger. This is a matter that usually concerns the developers, but not the users.

Another trend identified in the suggestions (table 6) was donation bonuses to bigger achievements. Two players make similar colocations about the matter: "Harder questions may be fun! Maybe to donate more if you choose to go that route" or "The only thing that comes to my mind is some bonus points for biggest achievements (and more free rice at this point)". This means that harder efforts should be better rewarded – or rewarded accordingly to the efforts put into it –, mainly in terms of rice/donations. This incentive could motivates the users to put on an extra mile and donate

even more. This suggestion demonstrates that the players are engaged and concerned about the cause, as they think of ways they could provide extra help.

Even though a narrative is not an element mentioned by the game designers as something essential to games, the players miss its presence on Free Rice. The suggestion was noticed on the survey, but this trend is also possible to spot on the alternative channel the players use to interact: Twitter. On the social media, there are several profiles that represent groups and develop their own narratives. The frequency varies from weekly to monthly and on every new post, the story develops. Again, this shows that the community is engaged on the cause and looks for alternative ways to improve the game and motivate the players. However, their reach is limited, as its posts only gets to their twitter account followers – which might not even be the whole of the group they represent in the game. A general storyline set by Free Rice would reach all of the players and serve as another mechanism to boost motivation and engagement.

The game also lacks a more concrete structure that supports social connectivity. One of the player explains: “I would like the game becomes more social. For example there is possible to join the groups but we can't communicate with each other” (table 6). According to McGonigal (2011), this social connection is one of the elements important to generate engagement in a game. Even though Free Rice players' community is active and concerned with the cause, there is no mechanism that allows the individuals to have further interaction in game. They are allowed to join groups – which enhances the sense of belonging – but they cannot chat, exchange their experiences, achievements or struggles with the quizzes. To compensate that, they go to Twitter and share their achievements – or other things they find relevant – through posts in the social media. For a game that cherishes cooperation of all fighting for the same cause, Free Rice does little to reward the collective. There is no possible way for the individuals coordinate their efforts in game, share their achievements and victories with the groups or celebrate together. On the contrary, the victories are limited mostly to an individual level, expressed through a global ranking – established according to the amount of rice donated. Even though Free Rice offers groups' rankings as well, their members cannot express their excitement and happiness to each other. Even though this game aims for a positive impact through collective effort, it provides little support to promote real integration of its members.

Finally, Free Rice does present an annual report about how the money raised by the players is used. Even though this is not directly connected to the game's mechanics,

it is important to keep the transparency and accountability of the project. A report would not affect directly the users' experience, but it could be an interesting way to connect the virtual efforts to the concrete impact. More than visual effects of grains of rice donated or a rice count, it is important to show how the work done in the game translates into impact in real life. This could connect the players more to the cause and show how important their efforts are; how many people the collective endeavor was able to benefit and how.

5.4. Is there an impact beyond the screens?

Forty three percent of the interviewed players reported doing activities in the real world that result into positive impact (graphic 12). This shows that part of the players are already concerned and engaged in real life to create a change, even if small and within the reach of their individual actions. However, the research found a gap between the actions and the feelings as 70% of the subjects revealed that Free Rice inspired them to work for a change beyond the screens (graphic 13). One hypothesis is that some of the players might not have reported daily-life or small actions as "food waste reduction". This was not registered in the actions the players already do, but on how they felt inspired to make a change (table 9).

Overall, Free Rice worked well to raise awareness about hunger and food security. Apart from reducing food waste, players also reported making donations – or the will to, when money is available – to organizations engaged with promoting food security. On giving people the opportunity to help and contribute to a great cause, Free Rice empowers them. The players explain: "I feel like my individual actions can have a good impact" and "I feel empowered. Makes me want to help people the way I can" (table 9). The game highlights to its players that individual actions matter and they can have a significant impact when summed up. As is evidences the importance of individual actions, people also report feeling encouraged to help others more: "It encourages me to go an extra mile in helping others. It reminds me that I could still make a change, even just by doing simple things" (table 9).

Free Rice does a good job engaging people in a global issue such as hunger. In fact, 100% of the players feel like fighting hunger when they play the game. In particular, the platform is good at showing people how their individual actions matter, as most of the interviewees reported that they felt their efforts were important, even if a little. For instance, a user says "Even if it is a small donation, I feel that I am contributing" (table

10). In addition, the players feel that their efforts are important in a bigger picture; that the result of their work summed up can make a difference and help people. A user explains, “My way of playing this game may be small but through the collective efforts of other people who are also playing this game, together we are helping fight hunger” (table 10). The game is a reminder to people that their individual actions do matter, mainly when summed up and put into a bigger picture. It shows that change requires action, collective engagement and that civilians can be a source to fight hunger.

5.4.1. From the screens to the world

The main way the project fights hunger is through meals distribution programs. In light of Galtung (1969, p.168) this measure could be an attempt to reduce structural violence through the gap that exists between “the potential and the actual; between what could have been and what is”. As previously exposed, enough food is produced in the world to feed all, but the distribution is not even. Therefore, by providing meals, the program reduces the food gap that affects the people in need. However, its actions occur for a short period of time which could jeopardize its long-term effects.

Even though these operations are vital to keep vulnerable individuals nourished or even from dying, they might not be enough to develop resilience nor capacity building in the communities. Hunger is a deeply rooted problem that has its basis on the socio-economic structure of the society; nevertheless, the project only scratches the surface of the problem, as it promotes little structural changes.

To achieve “zero hunger” it is necessary to “eradicate”. Cambridge Dictionary defines “eradicate” as “to get rid or destroy something completely” (2020). To solve hunger, this demands actions that focus on sustainable and long-term solutions. It is possible to say that Free Rice does not necessarily work to eradicate hunger, but to provide emergency aid and relief to the ones who need the most. However, through the game’s perspective, the use of the words “hunger eradication” or “zero hunger” as a goal might be more engaging and motivating to the players. It is important to highlight that hunger is a multidimensional problem that requires a joint of different actions and relief is one of them, but they should mostly support the development of vulnerable individuals and communities through social and economic empowerment.

On Free Rice’s list of operations – previously mentioned (appendix I), it is possible to see that the project funded school meals. This kind of action has the potential to generate more significant and long-term changes towards hunger reduction, as it

increases class attendance. Moreover, the provision of meals keep the students nourished and able to focus more on the lectures, which can also improve their grades performance and learning outcome. Hence, this modality of meal distribution invests in human capital. Looking at the long-term results it enhances the individuals' health and productivity, and improves their future opportunities in life, making them and their future generations less susceptible to poverty (FAO and WFP, 2002).

Free Rice also offers meal programs to pregnant and nursing women (appendix I), which is another modality that can support sustainable changes to the lives of both: mothers and children. As previously explained, good nourishment during pregnancy reduces child mortality rate or the chances of the kids to be born stunned and it improves their future life opportunities. In addition, women who know the importance of good nourishment are more likely to invest more in food for their children, which on the long-run decreases the susceptibility of the next generations to poverty and hunger (Quisumbing *et al.* 1996). However, the short duration pattern is maintained, as Free Rice operations lasted for two months with that target group. It is important to highlight that even though it is carried out through a short period, these efforts are vital to the individuals that receive the aid.

To achieve social justice and structural peace it is necessary to tackle the different sources of inequality. School meals and nursing projects presents potential to operate in some of the root causes of hunger, as it also supports access to education, livelihoods improvement and empowerment. Even though there is potential, it is not fully achieved, as Free Rice operations did not last long enough to support real and long-term changes. Again, this evidences the relief nature of the project. On the other hand, it is important to keep in mind that the funds that the project raises are limited and directly connected to the players' efforts, which can affect the duration and size of the aid operations. The full assessment of the impact of Free Rice's operations on field is limited due to the lack of a full report, which was previously mentioned as a weakness of the project.

5.5. Final considerations about Free Rice

Hunger is a complex problem embedded in different sources. It is not easily solved, as it requires joint and continuous efforts that involves several actors and actions. Hence, it is not the responsibility of a single organization to provide a universal solution. Moreover, actions to tackle hunger must be local, as each context might have different root causes to be addressed.

Free Rice's operations mostly provide relief through meals provision to the vulnerable communities it chooses to aid. Relief actions are not ideal to treat the root causes of a problem, as they only address a symptom of it. However, they play an important role in the path to development because they serve as a stabilization tool and, more importantly, they maintain human dignity and minimal human rights standards. It is not possible to talk about development in disrupted environments where minimal human rights – as the right to adequate food – are absent or where people have to worry if they will have food to survive to the next day. Humanitarian action, such as the ones Free Rice promotes, are vital to provide this stability to vulnerable communities and to then evolve into development programs.

Putting this in perspective generates a question whether Free Rice's proposal to "end hunger" is right or wrong. Even though the broad goal might not be accurate – taking into consideration the previous discussion –, it is an important narrative resource to motivate and engage the players. In the research, all of them felt like their efforts mattered in the fight against hunger. The game's proposal is interesting because it is inclusive and it suggests to the users "you can help us fight hunger too; you can be the driver of change". It also empowers the players; it shows them that they can do something to positively contribute to a global issue and that their individual actions are powerful as a collective.

One of the highlights and innovative features of Free Rice is that it does not require money from its players. International NGOs – such as the WFP – get their funds through donations from other organizations, private sector and civilian population. However, monetary donations is something that not all individuals can afford, so the game offers a solution to reach a target group that wants to help, but cannot. Moreover, the fact that the people have to invest their time and engage in an activity can enhance the feeling of contribution towards the cause. The game is a successful example that shows that the civilian population is willing to participate and can be included in the process of solving global issues. Solutions like this can be a good alternative to help organizations collect extra funds while engaging the civilian population more in the matter.

6. Conclusion

Games are a global phenomenon with high engagement capacity. With the industry under continuous expansion, its full potential has not been reached yet. The growth allowed the industry to diversify and explore new grounds – other than fun – as serious games or games for a change. With the development of these categories, here was

a paradigm shift, in which games are no longer just pure entertainment, but also a problem-solving tool.

However, games for change still represent a small market share of the industry. This is a limiting factor for the impact it can produce, as the power of the tool is on the numbers of individuals it can reach and engage. On Free Rice's case, a larger amount of people playing represents more donations and, consequently, more meals provision. Hence, the research investigated what is so appealing in games, as they manage to engage a great amount of people. To concretely study it, the research analyzed Free Rice on how it engages its users, how they feel about their contributions and what is the real impact of the project.

Free Ice presents a serious problem to the players through an engaging and fun interface. As previously explained, the project allows individuals to fight hunger by playing a quiz game. For each correct answer, the users donate the equivalent money to 10 grains of rice. The program has two main stages: the virtual – where the players put on their efforts to donate – and the real world – where the virtual work turns into concrete results, through the use of the donations in humanitarian operations to provide food to vulnerable communities.

To fully understand the case, the background and theory framework presented two fields of knowledge: game design theory and food security, poverty and development theory – in addition to the case in the end. At first, background about the games industry was provided to show its potential, and then different games definitions and game mechanics were introduced as well as how they play a role to achieve user engagement. Those theories were used to understand how Free Rice structured its mechanics in order to get players and fight hunger. The second block of theory introduces the discussion about hunger and food security. At first, it provides context on the current state of hunger in the world. Then, it presents Galtung's theory about structural violence and how hunger fits under that umbrella. In addition, several reports were brought to the section offering theories and policies to tackle hunger. Finally, the role of the States was clarified – mainly in regard of food security; and it was presented how international organizations – in special the WFP – work to provide aid and cover that gap when necessary. With the conjunction of both sets of theories, it was possible to present an overview about how Free Rice was designed to engage the players.

In addition, with the data analysis of the surveys conducted with the players, the study analyzed and discussed what are the most important elements of Free Rice that

makes it engaging to the users and how they feel like when playing it; the game can still improve; and what is its real impact. The research found out that its most important feature – according to the players’ perspective – is not linked to a certain type of mechanics, but that it allows people to donate and engage on a cause for free. Its second most important feature is that it is educative and it does help the users to improve their knowledge within the categories offered. There is evidence that shows that the flow also plays an important role on the users’ engagement, as all of them reported to have positive feelings when playing it. Feelings as “proud”, “satisfied” and “rewarded” reinforces this hypothesis, as the state of flow induces a feeling of deep gratification with the work that is performed.

Even though Free Rice already presents an interesting level of engagement, it can still improve to provide a better experience and more motivation to its players. Things as more categories, a more complex reward system that provides bonus rice for harder levels; better social connectivity and interaction; and a narrative with a story line can be further developed and implemented. In addition, it lacks a report – about what is done with the donations – to maintain transparency and accountability to its players.

Free Rice provides a platform to people who want to help – but had no opportunity to – to join efforts and work together. Its operations are still limited as the donations depend on how big its user base is and how much they play. In addition, its real life impact is extremely important even though it might not be directly linked to solving hunger on its roots, but more to providing emergency aid and stability to vulnerable communities. More importantly, it is example of an innovative solution to include and empower the civilian population in the process of solving world issues.

The research presents limitations as it is a case study based on qualitative analysis, hence it cannot be generalized. In addition, the sample was not picked from the entire players population – who play Free Rice –, but from the population who plays Free Rice and is on Twitter. This was the only possible way to reach the target group, as there is no forum or system that allows message exchange in Free Rice’s website. The assessment of the full impact of their (WFP and Free Rice) aid operations was limited as there was no available report. The research also tried contact with WFP to ask further questions about the program, but due to the COVID-19 pandemic, there was no availability for an interview within the research period.

Future studies can try to investigate the impact of Free Rice’s field operations. In addition, a comparative research could investigate if there are any differences in the

feeling of purposefulness and helpfulness between two or more games for a change. If they act in the same way engaging people or if there are differences and what would they be. Finally, international organizations – such as the UN – set the guidelines and praise for the society’s engagement. However, they not always offer ways for the population to contribute more actively. Hence, further research can investigate how international organizations could lead the change through a more inclusive civilian participation.

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APPENDIX

Appendix I. List of operations funded by Free Rice. Note that it is not all of the operations funded by them, but a few examples registered in their archives. Source: Free Rice, 2014.

Here are some examples of where Freerice rice has been distributed:

- Cambodia: From June 2011, all rice raised on Freerice will go to Cambodia where it will be purchased locally and will support our school meal programmes there. It's not the first time Freerice has supported Cambodia. We previously provided enough rice to feed 13,500 women.
- Haiti: From January 2011 until May 2011, rice was allocated to Haiti. Nearly 6 billion grains of rice was donated, enough to feed nearly 300,000 people two meals for a day.
- In [Bangladesh](#), to feed 27,000 refugees from Myanmar for two weeks. [Watch Freerice being distributed in Bangladesh.](#)
- In [Cambodia](#), to provide take-home rations of four kilograms of rice for two months to 13,500 pregnant and nursing women.
- In [Uganda](#), to feed 66,000 school children for a week.
- In [Nepal](#), to feed over 108,000 Bhutanese refugees for three days.
- In [Bhutan](#), to feed 41,000 children for 8 days.
- In [Myanmar](#), to feed 750,000 cyclone affected people for 3 days.

Appendix II. Survey questions

1. How old are you?

- Under 15
- 15 to 25
- 26 to 35
- 36 to 45
- 45 to 55
- Over 55

2. Gender?

- Male
- Female

3. Where are you from?

4. In your daily life, which device do you use the most?

- PC
- Cellphone
- Tablet
- Consoles

5. Which device do you use the most to play Free Rice?

- PC

- Cellphone
 - Tablet
 - Consoles
6. Do you play other games than Free Rice?
- Yes
 - No
7. How much time a week do you dedicate to playing games?
- Less than 1 hr
 - From 5 to 10
 - From 10 to 15
 - More than 15
8. What is the main reason that drives you to play Free Rice?
9. What are the secondary reasons for you to play Free Rice?
10. What do you like the most about Free Rice?
11. How do you feel like when playing Free Rice?
12. Could you translate that feeling for me in one word?
13. Do you feel somehow challenged by the game? If yes, why? If no, why?
14. Do you think it has helped you to learn about new subjects or to improve your knowledge? If yes, how? If no, why not?
15. Can you think of something that could improve the game and your experience playing it? If so, what would it be?
16. Would you feel more motivated if there were collective goals stipulated by Free Rice for the community?
17. Other than Free Rice, do you do any other activity, out of the virtual world, that has a positive impact on world? If yes, what is it?
18. Has playing Free Rice inspired you to work for changes in the real world? If Yes, in what ways? Please explain.
19. Do you feel that by playing Free Rice you are helping to fight hunger? If yes, why? If No, why?