HORIZON2020 FRAMEWORK PROGRAMME
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Advanced digital gaming/gamification technologies

Gamification of Prosocial Learning
for Increased Youth Inclusion and Academic Achievement

D2.1
User requirements
The document is based on the research on the core domains of prosociality in children, and how to implement these into digital games. The document also explores the trait that can influence prosociality and the school values from 6 different countries: UK, Italy, Spain, Turkey, FYROM and Greece.

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<tr>
<td>AMES</td>
<td>Adolescent Measure of Empathy and Sympathy</td>
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<td>BDT</td>
<td>Basis, Domain and Target</td>
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<td>BEIS</td>
<td>Brief Emotional Intelligence Scale</td>
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<td>CEAQ</td>
<td>Children’s Empathic Attitude Questionnaire</td>
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<td>JRPG</td>
<td>Japanese Role Playing</td>
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<td>MMORPG</td>
<td>Massively Multiplayer Online Playing Game</td>
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Executive summary

The current deliverable is one of the outputs of work package WP2: Requirements and Gamification. It is a public document focusing on the Deliverable 2.1: User requirements. This document will be made available on the project website for external parties interested in the creation of the digital games on the ProsocialLearn platform using prosocial APIs. The document provides all the relevant information about the core domains of prosociality and how they each have an influence on academic performance and social inclusion. More specifically, this document includes background research on the development of each core domains of prosociality, their effect on academic development and social inclusion, some preliminary research about what teachers value in terms of prosociality, a description of potential social traits that could influence the experience of each players and finally suggestions of functionalities which may be supported on the ProsocialLearn platform for creation of prosocial digital games by a variety of developers. The document also explores the trait that can influence prosociality and the school values from 6 different countries: UK, Italy, Spain, Turkey, FYROM and Greece.
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1 Introduction

This section provides detailed information about the purpose, scope and structure of the document as well as the intended audience of the document.

1.1 Purpose of the Document

The current deliverable is one of the outputs of work package WP2: Requirements and Gamification. It is a public document focusing on the Deliverable 2.1: User requirement. This document will be made available on the project website for external parties interested in the creation of the digital games on the ProsocialLearn platform using prosocial APIs. The document provides all the relevant information about the core domains of prosociality and how they each have an influence on academic performance and social inclusion. More specifically, this document includes background research on the development of each core domains of prosociality, their effect on academic development and social inclusion, some preliminary research about what teachers value in terms of prosociality, a description of potential social traits that could influence the experience of each players and finally suggestions of functionalities which may be supported on the ProsocialLearn platform for creation of prosocial digital games by a variety of developers.

1.2 Scope and Audience of the Document

This document is mainly intended as insight into user requirements from the psychological research in child development and prosociality perspective, as it affects inclusion and academic achievement, with in the context of digital games design, development and delivery. This document will serve as a key foundation for development in Task 2.2 Prosocial game design theory and methodology, and provides input to Task 2.3: System requirements and architecture.

Task 2.3 will include a formal definition of a system information model and communication processes that will be assessed in relation to security requirements controls. The security requirements where originally planned for D2.1 but the scope of the user requirements analysis needed to consider in depth psychological constructs rather than their representation within the ProsocialLearn platform. As such the security requirements will now be documented in D2.3

1.3 Structure of the Document

This document contains the key sections detailed below:

- **Section 1: Introduction** – an introductory section, i.e. this present section, which describes the main purpose of the document.
- **Section 2: Prosocial Learning Objectives (PLOs)** – this section develops the psychological theory of prosociality. Each subsection develops a particular objective, how they are related to academic achievement and social inclusion and key functionalities that may be supported in the ProsocialLearn platform for digital games.
- **Section 3: Contextual Factors affecting prosocial learning** – this section describes the traits that could affect prosociality to create a user-specific experience.
- **Section 4: Data from the teachers** – this section describes details of the preliminary data obtained by the teachers in the UK, Italy, Spain, Turkey, FYROM and Greece about the core domains of prosociality
- **Section 5: Conclusion** – this section presents the conclusion of the document.
- **Section 6: Disclaimer and acknowledgement**
An additional section about the functional and system requirements was originally thought to be included in this deliverable. However, the consortium agreed that it made more sense to have this section in the D2.3 deliverable. The consortium will therefore work on and deliver a complete section on the functional and system requirements in the D2.3 report.
2 Prosocial Learning Objectives (PLOs)

2.1 Generalities

Social exclusion is a key concept in Europe social policy, and both the Europe 2020 strategy and the Digital Agenda for Europe aim to ensure greater social cohesion and employment. Support for disengaged and disadvantaged learners, enhancing their employability and integration into society is a key. This includes helping people with learning disabilities, and young people to be more employable. Children in danger of social exclusion, showing little to no signs of empathy and high levels of aggressive or anti-social behaviours should benefit from digital games tailored to teach prosocial skills that can help them achieve academically, appreciate team work and recognize the value of understanding other people’s needs. However, many current digital games targeting the education sector suffer from being of relatively low quality and fail to capture the imagination of players, significantly reducing their effectiveness. Contrast this to games in the entertainment industry where innovative technologies and delivery models are revolutionising society and culture. It’s clear that traditional game designers know how to produce engaging stories and game content but they require scientifically proven game mechanics that can be used to create serious games for non-leisure contexts in way that delivers beneficial outcomes for players. However, before we can develop these platforms what would enable the creation of these games, an understanding of what prosociality means and how it is related to social inclusion and academic achievement is necessary. So what is prosociality? Helping a friend studying for a math exam, consoling a friend who is crying, sharing a chocolate bar with someone, defending a friend when he is unfairly accused of something, and including a new classmate in the ball game are all examples of prosocial behaviour children are doing every day. Research shows that children who help others have more positive relationships and interactions with their peers, therefore increasing social inclusion. Research also shows that prosociality is important for academic achievement. First directly, as prosocial children are seen as ‘nicer’ by their teachers who in turn would spend more time teaching them. Second, it also has an influence indirectly via social inclusion. For instance, social rejection has been linked with absenteeism (e.g., DeRosier, Kupersmidt, & Patterson, 1994; Hymel, Rubin, Rowden, & LeMare, 1990), grade retention, and adjustment difficulties during the transition to middle school (Coie, Lochman, Terry, & Hyman, 1992). Pupils with lower prosociality develop lower academic self-concepts (Flook et al., 2005), and disengage from classroom activities (Buhs & Ladd, 2001).

Despite the supportive effect of prosociality on academic achievement and social inclusion, limited research has been done in this domain. This is partly due to the fact that prosociality in itself is a complex concept and has many core domains. The ultimate aim of this report is to demonstrate that teaching prosociality can improve academic achievement and social inclusion and how the games elements could be developed into the ProsocialLearn platform and ProsocialLearn API to enable the creation of videos games that will be engaging for children to practice and improve prosociality in a school context. Research has shown that children learn better when the concept to be learnt is taught through play, particularly video games. Particularly, research has shown that frequent video game play might enhance inductive reasoning (Greenfield, Camaioni, Ercolani, Weiss, Lauber, & Perucchini, 1994; Pillay, 2002), spatial visualisation (Okagaki & Frensch, 1994), visual selective attention (Boot, Kramer, Simons, Fabiani, & Gratton, 2008; Green & Bavelier, 2003, 2006a, 2006b, 2007; Karle, Watter, & Shedden, 2010), and memory (Boot et al., 2008); all these skills being essential for good academic learning. Eventually, ProsocialLearn will establish a new market for digital games.
aiming at increasing social inclusion and academic performance. This ground-breaking digital gaming genre will be created to focus on helping children to acquire prosocial skills necessary for positive relationships, team working, trustworthiness and emotional intelligence.

In the next section, we review the different core domains of prosociality and how they are linked to academic achievement and social inclusion. Specifically, we develop how empathy, social competence, emotional intelligence, trust, fairness, compassion, generosity and cooperation each influence social inclusion and academic achievement. Second, we report the data we collected from teachers about their view on prosociality in the school context and the feasibility of teaching children prosociality using video games. Finally, we review the traits and environmental factors that will help develop a specific user profile.

The following literature review draws heavily on ideas articulated in *The Roots of Prosocial Behavior in Children* (Ed: Eisenberg & Mussen, 1989) and *The Wiley-Blackwell Handbook of Childhood Social Development Second Edition* (Ed: Smith & Hart, 2011). Readers seeking further depth of discussion should refer to these two sources.

### 2.2 Empathy (having concern about how others feel)

#### 2.2.1 Generality about empathy

Empathy is one of the core domains of prosocial behaviour as research has positively linked children’s empathy with general prosocial behaviour in childhood (Batson, 1991; Eisenberg, Fabes, Schaller, & Miller, 1989; Zahn-Waxler, Robinson, & Emde, 1992).

Empathy develops in children as a shift from self-concern to more empathic, other-oriented approach. Particularly, around the age of 7-10, children’s cognitive maturity allows for a more sophisticated perspective-taking approach and acquire greater awareness of another person’s needs. At that age, they also understand that these needs can differ from their own and they can also experience empathy towards people who are not physically present (e.g., if they hear about someone in distress).

Empathy has been linked with children’s social competence and has been shown to lower problem behaviours, therefore increasing social inclusion. In addition, empathy has been shown to contribute to academic functioning, although it is suggested that it may be the children’s social competence that mediates the relation between empathy and the level of a child’s academic achievement. The two following sections develop the relationship between empathy, academic achievement and social inclusion, while the third section develops how games could improve empathy in young children.

#### 2.2.2 Empathy, academic performances and Social Inclusion

Empathy has been shown to have a direct role in children’s school success. For instance, some researchers have found positive correlations between empathy and reading skills, language and mental development, or general intelligence level (Carlo, Hausmann, Christiansen, & Randall, 2003; Cassidy, Werner, Rourke, Zubernis, & Balaraman, 2003). Furthermore, empathy has been found to predict children’s school achievements such as academic self-efficacy and achievement tests (Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001; Caprara et al., 2000; Johnson, Beebe, Mortimer, & Snyder, 1998; Wentzel, 2003; Wise & Cramer, 1988). This relation has moreover been found over time with Caprara and colleagues (2000) showing that early prosocial behaviour in third grade (around 8 years old) predicted higher academic achievement in eighth grade (around 13 years old), even after accounting for variation in early academic achievement.
Empathy may also play an indirect role in academic achievement, through social skills. For instance, empathic children tend to be popular and sociable with their peers, and tend to have supportive peer relationships (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Clark & Ladd, 2000; Denham et al., 2003; Graziano, Keane, & Calkins, 2007; LaFontana & Cillessen, 2002; Lansford et al., 2006; Robinson, Zahn-Waxler, & Emde, 1994; Sebanc, 2003; Warden & Mackinnon, 2003; Young, Fox, & Zahn-Waxler, 1999). These children are also more likely to cooperate in class and exhibit appropriate classroom behaviours and may be well liked by teachers. In turn, these students may receive more help from teachers and from their peers and may therefore be more engaged in school activities, increasing their academic performances (Coie & Dodge, 1988; Wentzel, 1993).

Likewise, existing research reveals negative relationships between empathy and aggression or externalizing problems (Diener & Kim, 2004; Hastings, Zahn Waxler, Robinson, Usher, & Bridges, 2000; Hughes, White, Sharpen, & Dunn, 2000; Strayer & Roberts, 2004). Because disruptive children are thought to spend less time on task (Arnold et al., 1999; NICHD Early Childcare Research Network, 2004; Ramsey, Patterson, & Walker, 1990), do less homework (Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984), and may receive less instruction from teachers (Coie & Dodge, 1998; Pianta, La Paro, Payne, Cox, & Bradley, 2002), it is easy to understand why these children may be less successful academically.

To summarise, empathy is a core domain of prosociality that seems to have a large influence on social inclusion and academic achievement.

**2.2.3 How to implement Empathy in digital games?**

Empathy is directly involved with emotion, and thus most empathic measurements address feelings and reactions to situations as opposed to directly observable behaviours (Funk, Fox, Chan, & Curtiss, 2008; Reid et al., 2013; Vossen, Piotrowski, & Valkenburg, 2015). The three main empathy measurement scales are the Children’s Empathic Attitudes Questionnaire (CEAQ; Funk et al., 2008), the Kids’ Empathic Development Scale (KEDS; Reid et al., 2013), and the Adolescent Measure of Empathy and Sympathy (AMES; Vossen et al., 2015).

In the first of these, the CEAQ, empathy is scored on the following dimensions: “concern with immediate harm or meanness”, “happy when others are happy”, “identifying with others’ problems (familiar situation)”, and “identifying with others’ problems (cannot relate to reason)” (Funk et al., 2008, p. 192). These dimensions are hierarchical, with concern for immediate harm being the lowest order of empathy and identifying with problems in an unfamiliar context being the highest level. Some of the CEAQ’s items are “Seeing a kid who is crying makes me feel like crying”, “It bothers me when my teacher doesn’t feel well”, and “I would get upset if I saw someone hurt an animal” (p. 193). Games could be designed to incorporate the CEAQ’s hierarchical nature. Level 1, for example, could include a close friend of the protagonist being bullied, while the highest level of the game could be a protagonist having to help someone in a context radically different from their own, say the story’s villain. The protagonist’s, controlled by the child, reactions could then be recorded and analyzed.

In the KEDS, empathy is measured in a similar fashion (Reid et al., 2013). Instead of being presented with self-report statements as in the case of the CEAQ, researchers present children with hand-drawn images of other children engaging in a variety of activities including playing on swings, fighting over a toy, or unwrapping a gift (p. 244). The participating child is then asked a series of questions pertaining to the image and their empathic response. These questions are divided into three types of empathy: affective, cognitive, and behavioural. For the affective dimension, the researcher asks how
a given child in the scene feels. The researcher then asks the child to describe the situation in the image and tell them why the given child in the image feels the way they do; this constitutes cognitive empathy. Children are then asked what they would do if they were in the same situation, their response being an indicator of behavioural empathy. The beauty of testing empathy in a virtual context is that children can be presented with these situations without putting anyone at risk, operationalizing these items and rendering the empathic response, specifically in the behavioural domain, observable. Instead of static, hand-drawn images, children can face dynamic characters with which to identify. Children could empathize with both their avatar, ideally the game’s protagonist, and with other actors in the world. Their responses to various situations in-game could be coded according to the hierarchical model presented in the CEAQ (Funk et al., 2008), with the added dimension of affective/cognitive/behavioural status provided by the KEDS (Reid et al., 2013) to determine children’s developmental progress in terms of empathy.

However, the AMES brings with it a caveat to this line of research (Vossen et al., 2015). In their scale, Vossen et al. (2015) are careful to distinguish between empathy and sympathy, a similar but distinct construct. Cognitive empathy in the AMES is more concerned with the identification of others’ feelings despite others’ attempts to hide them (i.e. “I can tell when someone acts happy, when they are actually not”, p. 68), while affective empathy is actually adopting the emotion of another person (i.e. “When my friend is sad, I become sad too”, p. 68). What Funk et al. (2008) define as low-level empathy, Vossen et al. (2015) define as sympathy (i.e. “I feel sorry for someone who is treated unfairly”, p. 68). It is worth noting that the AMES is designed for adolescents, whereas the CEAQ and KEDS are both designed for school-aged children (Funk et al., 2008; Reid et al., 2013; Vossen et al., 2015); the distinction between low-level empathy and sympathy may not be required until later in life. It is also possible that sympathy and empathy produce similar, positive behavioural responses in young children, which is ultimately what parents and teachers seek.

Thus, games rules and goals ought to enable the promotion and practice in the following behaviours:

- **Correct identification of emotions** (ex: planning how best to interact with characters based on their emotional state, such as waiting for a better time in the game to approach an angry character)
- **Developing the ability to accurately describe the cause and effect of emotions** (ex: the protagonist may have to determine why the villain of the story is acting out, say a difficult relationship with a family member, being a victim of bullying, or the death of a pet)
- **Responding appropriately to others’ emotions** (ex: choosing the appropriate response from a series of options in-game when communicating with a sad/happy/angry character, based on said character’s emotional state)

### 2.3 Trust (being trusting of people)

#### 2.3.1 Generalities about Trust

It is commonly thought that trust is a fundamental quality for a society to function as a whole (O’Hara, 2004; Uslander, 2002; Volker, 2002; Warren, 1999). For instance, trusting that a policeman is doing the right thing; trusting close family members (e.g. ‘my mum said that this dog is dangerous and I should not touch him’); trusting friends not to tell a secret etc are all important factors that are considered by every individuals, at the conscious or unconscious level.
There is emerging research evidence demonstrating that interpersonal trust during development is associated with social and cognitive functioning (Harris, 2007; Imber, 1973; Rotenberg, Boulton, and Fox, 2005; Rotter, 1980), and the development of close relationships (Holmes and Remple, 1989).

But how to define trust has been a recurrent problem in research and numerous researchers have tried to discuss the different components of trust to better understand this concept. For instance, Lewis and Weigert (1985) made a distinction between the cognitive, emotional, and behavioural dimensions of trust. The cognitive dimension corresponds to a rational knowledge about who to trust in the social world (e.g. trust policeman, doctors etc). The emotional trust dimension refers to the emotional bond found in relationships (e.g. the emotional response when a friend betrays our trust). Finally, behavioural trust can be explained as the trust an individual has to undertake risky behaviours; this trust reflects confidence in others to act unquestioningly (e.g. closing your eyes and falling backwards while trusting your friend will catch you).

Rotenberg and al, refined this approach and developed a framework consisting of 3 bases, 3 domains and 2 target dimensions: the BDT standing for Basis, Domain and Target (Rotenberg, 2010). Figure 2 represents this framework. The 3 bases are honesty (when a person tells the truth and has genuine rather than manipulative intent), emotional (when a person refrain from causing emotional harm, such as keeping a secret) and reliability (whether a person fulfil his or her promises); the 3 domains of trust are cognitive/affective (belief that others demonstrates the three bases of trust), behaviour-dependent (expecting others to act in a trusting fashion) and behaviour-enacting (when individual behaviourally engage in the three bases of trust); and finally the 2 target dimensions corresponds to whether the target is specific (general category vs specific person) and/or familiar (slightly to highly familiar).

![Figure 1: The bases x domains x target dimensions interpersonal trust framework. From Rotenberg and al.](image)

The following section develops on how this network can be used to understand the relationship between trust, academic achievement and social inclusion.
2.3.2 Trust, academic achievement and social inclusion

The BDT framework provides a point of view on why interpersonal trust is crucial for children’s social skills and academic achievement. For instance, if a child believes that the persons in his social world (parents, teachers, policeman, doctors etc) are deceptive, manipulative and do not keep their promises or confidential information, the child might withdraw from social contact and fail to attain social skills, close relationships, academic achievement, and medical treatment for illnesses.

Consistent with these conclusions, children’s trust beliefs have been found to be positively associated with helping others (Rotenberg, Fox, Green, Ruderman, Slater, Stevens, and Carlo, 2005), academic achievement (Imber, 1973), low loneliness (Rotenberg, MacDonald, and King, 2004), and low depression (Lester and Gatto, 1990).

However, it is important to note that too much trust can have negative consequences. Rotenberg, Boulton, and Fox (2005) carried out a longitudinal study with children initially of 9 years of age. They found that children with very low trust beliefs and those with very high beliefs both violated peer norms of trust (by being cynical or naïve, respectively), had lower self-perceived social acceptance, and were more excluded by peers and less preferred than the children with the middle range of trust beliefs. Furthermore, the researchers found that those forms of peer rejection resulted in increase in internalized maladjustment (such as loneliness, depressive symptoms, and anxiety). Even if children with very high trust beliefs were less disadvantaged than children with very low trust beliefs, this shows that too much trust (being naïve) can have harmful consequences.

To summarise, it seems that trust is important for forming positive relationship and therefore helps social inclusion. Not much research has been done on trust and academic achievement but we suggest that trusting the teacher can be a good starting point for high academic achievement.

2.3.3 How to implement Trust in digital games?

In traditional entertainment-based video games, trust is already an implicit structure. During RPG-style games (Role Playing Games), for example, one must trust their allies and naturally distrust the enemy whom you are trying to defeat. In point-and-click adventure games, you must learn which characters to listen to and trust in order to solve puzzles and advance the story. Finally, in online games (i.e. League of Legends, World of Warcraft, etc.), players have to trust their teammates in-game in order to either win the game in the case of MOBA-style online games (Multiplayer Online Battle Area), or to defeat large-scale enemies in the case of MMORPGs (Massively Multiplayer Online Role Playing Game). These pre-developed narrative structures and game mechanics can be implemented into prosocial games in order to teach children who to trust under which circumstances, ensuring that children have what Rotenberg et al. (2005) refer to as moderate levels of trust. It is worth noting that these online games are for-profit to an extreme and based solely on entertainment value. In the ProsocialLearn context, these could be modified for a smaller, intra-net capacity within a school, or could be lessened to simply multiplayer capacities without an online component. In the end, it is the teamwork element used to complete a large challenge that is the crucial factor.

With Prosocial Learning’s individualization system in which game dynamics are adjusted to children’s needs, games could also be created to specifically foster that moderate level; children high in trust beliefs could be presented with more tricky situations in-game in which it is harder to tell who to trust, while children low in trust beliefs could be presented with situations in which trust is crucial to completing the game. ProsocialLearn can also add to this existing framework more specific, targeted lessons in the three bases of trust in BDT: reliability, emotion, and honesty.
Take reliability as an example. A situation in-game could require the protagonist to determine upon which witness’ testimony to lean when deciding future action against a criminal. This is closely linked with the concept of honesty. If a witness is chronically dishonest throughout the game, at the moment of truth, children should not rely on their testimony. Reliability could also be implemented into resource management style games during task delegation. If a child is in charge of a team of people of different levels of reliability, they should assign crucial tasks to the most reliable team members while delegating smaller, less significant tasks to team members who have proven their unreliability, assumedly through failure to complete tasks in the past or perhaps through dishonesty in claiming to complete tasks they have not done. Children’s accuracy in selecting truthful, reliable characters for witnessing, delegation, etc. is an observable indicator of their healthy levels of trust. It will be the game developers’ challenge to create dynamic characters whose actions reflect their levels of reliability and honesty. Characters also require emotional depth so that they can react accordingly to the protagonist’s offers of help, dismissal, or potential betrayal; this will create a unique, immersive trust experience for students playing the game.

Thus game designers focusing on Trust would need to provide rules, goals or narratives that emphasise:

- Cooperation, where players need to trust each other and work together to achieve goals
- Characters with emotional depth and backstories that give clues to their trustworthiness
- Games involving delegation of tasks (assessment of reliability), selecting team members (assessment of reliability), or selecting “witnesses” (assessment of honesty)

### 2.4 Fairness (acting fairly)

#### 2.4.1 Generalities about Fairness

Fairness corresponds to an equal distribution of resources between different parties (such as peers or family members). Recent work provides evidence that expectations regarding a fair (i.e. equal) distribution of goods and resources are definitely present by the age of 7–10 years old. However, when exactly the apparition of fairness appears seems to create some debate. Initial studies on this topic suggested that children’s ability to distribute goods in a fair and equal manner did not arise until mid-childhood (Arsenio & Gold, 2006; Blake & Rand, 2010; Fehr, Bernhard, & Rockenbach, 2008; Lane & Coon, 1972). These researches used tasks such as the one used in Fehr et al. 2008 in which children would received a candy and were asked to choose whether their anonymous partner received zero candies or one candy. Under these conditions, children younger than 7–8 years of age did not reliably prefer the egalitarian allocation (1:1) whereas they did around that age and after. However, emerging evidence seems to suggest that these paradigms may have underestimated young children’s abilities, given limitations in the ecological validity of these experiments. Therefore, and to directly address whether young children can demonstrate an awareness of the norms of the fair distribution of goods, Olson and Spelke (2008) developed a third-party task. In this task, very young children (3 ½ years old) were asked to help a doll distribute toys to other dolls (recipient). With such setting, the majority of children chose to distribute the toys equally among the recipients. More recent studies have also confirmed that the development of fairness appears early in childhood. For instance, LoBue, Nishida, Chiong, DeLoache, & Haidt (2011) demonstrated that 3- to 5-year-olds react negatively when stickers are distributed unequally between themselves and another child; while Warneken, Lohse, Melis, & Tomasello (2011) demonstrated that 3-year-old children tend to share equally with another child following the completion of a collaborative task.
Therefore, by the age of 7-10, most children will have the ability to share fairly among peers. However, not all children do share equally and fairly so training them can have repercussions on their social environment.

Unfortunately, no research, to the best of our knowledge, has demonstrated the relationship between fairness and academic achievement or social inclusion. It seems intuitive to think that children sharing fairly and equally would be more socially included and more ‘liked’ by their teachers. Because these skills, as demonstrated earlier, have a direct role on academic achievement, we can suppose that acting fairly would help academic achievement but more research would need to confirm this.

2.4.2 How to implement Fairness in digital games?

Unlike many of the PLOs investigated thus far, fairness is not always evident in traditional entertainment-based video games. In fact, fairness norms are frequently violated in multiplayer games (i.e. “kill-stealing” phenomenon in online shooters and MOBAs) with impunity. This lack of punishment should be rectified in prosocial training games; if a child decides to act unfairly in a game, there should be clear consequences. For example, if a student is playing a resource management game involving alliances with computer players and they allocate resources unfairly between allies, poorly-treated allies could either defect or allocate resources unfairly toward the player. In an action-adventure game, prices at markets could go up if the player steals items from a shop. Positive outcomes should also be expected from acting fairly. A character treated fairly could offer special information required for a side-quest; for a harsher alternative, the narrative could be halted by the unfair treatment of a character until the situation has been rectified, say by profuse apologies or by redistribution of resources.

Research has demonstrated that fairness outcomes will happen naturally when playing with human counterparts (LoBue et al., 2011; Warneken et al., 2011). Children are able to recognize when they are being treated unfairly, and will react with displeasure. However, when it comes to younger children, fairness should be implemented in games more carefully than described above. For example, as opposed to a young child having to decide to allocate resources fairly between characters in a game, fairness is more likely to emerge if the student has to help another character decide how to allocate their resources (LoBue et al., 2011). Once fairness is consistent in this context, students can “graduate” to distributing their own resources. Children could also be presented with unfair situations themselves to better understand why fairness is ideal. In a race, a character in-game could have an unfair advantage; in a resource allocation game, a computer could start with more than the player. If a student chooses to act fairly despite these disadvantages, you will know that the training of fairness is working.

Thus game designers focusing on Fairness would need to provide rules and goals that emphasise:

- **Clear connections between student unfairness and unfavourable outcomes** (ex: a text box appearing on the screen after an unfair interaction saying something to the effect of “Uh oh! That wasn’t very nice. [Insert character] refuses to give you [insert key item]”, or whatever the case may be in-game)

- **Opportunities to act fairly after being treated unfairly**

- **Including situations in which fairness is required for advancement of the narrative or completion of optional quests** (ex: giving two guards equal amounts of gold in order to be granted permission to enter a city)
2.5  Compassion (feeling compassion when witnessing suffering)

2.5.1  Generalities about Compassion

Compassion is regarded as one of the greatest human virtues by all major religious traditions. It can be defined as the understanding of the emotional state of others and the desire to act on it to reduce the suffering and/or bring comfort to the people who suffer. Because compassion usually arises through empathy, these two concepts are strongly linked and the literature related to one concept usually describes/researches the other concept at the same time.

Although studies have shown positive effect of compassion such as that people who practice it produce 100% more DHEA, which is a hormone that counteracts the aging process, and 23% less cortisol, also labelled the “stress hormone,” no studies, to the best of our knowledge, have demonstrated a direct link between compassion and academic achievement or social inclusion. A large amount of research shows that practising compassion plays a key role in helping children to become considerate and optimistic adults. Because engagement, caring, optimism and happiness have indirectly been related to social inclusion and academic achievement, we could suggest that compassion might help academic achievement and social inclusion but more research would need to confirm this.

Another form of compassion has however been linked to academic achievement: self-compassion, or being kind to oneself in case of failure. When someone feels compassion for another human being who has made a mistake, the person feeling compassion is taking an open-minded and non-judgmental attitude towards the second person (as opposed to an attitude of harsh criticism or severe judgment) (Neff et al, 2005). In the same way, self-compassion involves being open to and aware of one’s own suffering, offering kindness towards oneself, taking a non judgmental attitude towards one’s failures, and framing one’s own experience in light of the common human experience (Neff, 2003). This form of compassion is developed in the following section.

2.5.2  (Self-) Compassion, academic achievement and social inclusion

Although no research has been conducted on the age group of interest here (7-10 years old), we report studies conducted among undergraduates with the beliefs that if these skills are important later in life, it seems logical to try and develop them as early as possible.

In particular, two studies examined the relationship between self-compassion, academic achievement goals, and coping with perceived academic failure among undergraduates (Neff, Hsieh, Dejitterat, 2005). These studies define self-compassion as being kind to oneself in instances of failure, perceiving one’s experiences as part of the larger human experience, and holding painful feelings in mind. Study 1 found that self-compassion was positively associated with mastery goals (more academically adaptive; mastering a subject) and negatively associated with performance goals (less academically adaptive; being the best) (see http://www.wou.edu/~girodm/100/mastery_vs_performance_goals.pdf for a summary on these two types of goals). Study 2 confirmed these findings among students who perceived their recent grade as a failure, with results also indicating that self-compassion was positively associated with emotion-focused coping strategies and negatively associated with avoidance-oriented strategies. These two studies therefore show that experiencing self-compassion is positively linked to academic achievement.
2.5.3 How to implement Compassion in digital games?

Some of the best compassion instructors in video games have been out on the market for years. Children of the late 80’s and 90’s can think back to Tamagotchi, the virtual keychain pet you had to play with and feed to keep alive. The wildly popular Pokémon franchise also includes instances of compassion, as the Pokémon need to be kept active and need to be taken to the hospital when injured. Nintendogs and other pet simulators also give children the opportunity to take care of another creature without risking the death of a live animal. These types of games are excellent tools for teaching children how to be compassionate to others, something that tends to come naturally between children and animals.

However, compassion is not relegated to the animal kingdom. In many RPGs, specifically of the JRPG variety (Japanese Role Playing Video Game), compassion is a key element of the narrative. Characters will often choose to sacrifice themselves to save their allies, and protagonists will often have to choose between ending a villain’s life and acting compassionately/mercifully toward them (see the ending of Final Fantasy IX for a concrete example of this). Acting compassionately will also occasionally open side-quests that would be unavailable if the player had not chosen to help a character in need, for example.

What is perhaps more limited in the world of gaming is being on the receiving end of compassion. When you are the hero, it is your job to be a pillar of the community (or the world) and show compassion and justice to others; rarely is it the other way around. Fallout 3 has an interesting way of creating a compassion situation in which the player is the recipient: you start out the game as an infant, largely helpless. Through vulnerability, you learn to accept others’ kindness. In the recent Steam release of Ori and the Blind Forest, the playable character (Ori) is taken care of by another character, Naru, when she loses her family. These backstories allow the player to live compassion vicariously through the protagonist.

Self-compassion, the construct most closely related to academic achievement, is implicit in gaming in general, although particularly for the action-adventure, puzzle-solving, and platforming styles. Well-designed games involve challenges that usually require more than one try to complete. This construct only becomes evident after failure, so including (temporary) failure is the only way to examine it. To train self-compassion, games should offer some kind of encouragement after failure. Some games do this in the form of hints, although this could suggest that the children are incapable of figuring out the problem for themselves. An alternative could be a text box with a message saying something like “Try again, this one’s really tough!” This acknowledges the difficulty of the situation while encouraging the child to persevere, assuring them that they can do it but it will be challenging.

For prosocial training purposes, these various pieces of compassion can be stitched together in a meaningful way. A protagonist could be shown compassion via their backstory, by a parent or a guardian of some kind, or by an ally in-game. During the game, players could be faced with options to be compassionate or not, such as offering players’ limited food resources to a starving stranger, or taking the time out of the main mystery in a detective story to help a little girl find her lost pet. Consequences for not acting compassionate could include denial of access to certain parts of the game such as side-quests or secret areas, a halting of the narrative, or simple induction of unpleasant emotions like sadness and guilt. Some games could also have a built in pet system, in which the protagonist has a furry friend, much like pet simulators or Pokémon. If the pet is cared for properly, then not only does the player/student avoid the feelings of guilt associated with letting an animal suffer, they also could potentially unlock “achievements” with their pets, much like the system in
Steam. Compassion is the same across age groups, so any changes across games for specific age groups can be limited to the specific situation as opposed to the full context. For example, a young child may show compassion to a bullied friend, while an older child might help another character grieve the loss of a parent. Low death-rates of pets and high completion rates in-game (as in 100% completion of all side-quests) would become objective ways to determine if children are acting compassionately.

Thus game designers focusing on compassion would need to provide rules, goals or narratives that emphasise:

- **Deep protagonist backstories that demonstrate compassion** (i.e. a loving mother, a caring foster parent, a protective older sibling, etc.)
- **Opportunities to show compassion to suffering characters** (i.e. giving a bandage out of your supplies to a wounded stranger)
- **Direct benefits associated with showing compassion** (i.e. unlocking a new area, completing a side-quest, etc.)
- **Some kind of pet system in which the protagonist must not care exclusively for themselves, but also for something vulnerable**
- **Tasks challenging enough to make the child fail a few times, followed by encouragement post-failure to train self-compassion**

### 2.6 Generosity (being giving and generous)

#### 2.6.1 Generalities about Generosity

Research has shown that children as young as eight months are willing to share toys with family members, peers, and even complete strangers (Hay, 1979; Hay & Murray, 1982; Rheingold, Hay & West, 1976). More research has shown that between the ages of two and four, children start sharing resources with others voluntarily (Brownell, Svetlova & Nichols, 2009), even when the resources are easily monopolisable (Warneken, Lohse, Melis & Tomasello, 2011; Benenson, Pascoe & Radmore, 2007). Some other research however, found that using a different paradigm looking at resource allocation, children under 7 were mostly not giving altruistically or even equally. They found that egalitarian tendencies became predominant only when children reach about 6 or 7 years of age (Fehr, Bernhard, & Rockenbach, 2008; Moore, 2009). Therefore, and regardless of which study or paradigm is used, it seems that children in the age group of 7-10 years old have the ability to be generous and share their resources equally with friends, family members or even complete strangers.

Unfortunately, no research, to the best of our knowledge, has directly demonstrated the relationship between generosity and academic achievement or social inclusion. **It seems intuitive to think that generous children would be more socially included and more ‘liked’ by their teachers. Because these skills, as demonstrated earlier, have a direct role on academic achievement, we can suppose that being generous would help academic achievement but more research would need to confirm this.**

#### 2.6.2 How to implement Generosity in digital games?

As has been largely the case for all PLOs thus far, generosity is already implemented in entertainment-based games on the market. In most games, although particularly RPGs, advancing the narrative requires giving items to other characters. Often, being generous will achieve a greater reward than simply being fair. In the JRPG Lufia II: Rise of the Sinistrals, upon completion of the main
quest in the city of Alunze, the king will offer you a selection of rewards. To achieve the highest end profit, one must select the “nothing” option, choosing altruism over a set gold reward. In the Super Nintendo classic Super Mario RPG: Legend of the Seven Stars, there is an option to buy at an exorbitant price a useless item: fireworks. The person selling them claims that they are selling these prototypes to keep researching and working toward the final copy. The first set can be traded in for another item, but after that, they lose all value, taking limited space in your inventory. If you continue to give to the firework maker to support his craft, however, you are rewarded at the end of the game with fancier and fancier fireworks displays. In Skyrim, giving coins to beggars across the world gives you the “Blessing of Charity”, a stats boost.

For Prosocial Learning’s purposes, generosity can be implemented in much the same way as fairness. If fairness gives a positive outcome, then generosity should give a bonus; if fairness advances the narrative, generosity should provide a rare item or open a secret in the level. The key is simply to give the option of being generous. In a list of options that includes a fair and unfair options, one of those unfair options should be generosity. However, to truly test whether the child is behaving generously, the item or resource should be valuable to them if they kept it as well. In many point-and-click games, for example, an item will be useless unless you give it to someone who specifically wants it. This is not a demonstration of generosity; it only demonstrates a desire to advance the narrative and clear one’s inventory or solve a puzzle. Giving a healing item to a non-player character (NPC), however, is an example of generosity, since the healing item could be used by the player.

Researchers and game developers can determine if the training is working by comparing number of times the generous option is selected versus the fair and unfair options. It is worth noting, however, that the research seems to indicate that generous behaviour will likely not start to emerge until mid to late childhood, so fair behaviour should be targeted in younger children. Generosity should be an option, but not an expected outcome in early childhood. However, like in the case of compassion, children of all ages can be the recipient of generosity. Kind characters could give supplies to players just starting out, whether it be in an RPG or resource-management context. In a mystery-type point-and-click adventure, some characters could be helpful, offering information without need of a reward. These are some simple ways to prime generous behaviour in children and demonstrate that it is something positive, even before they are at a developmental stage allowing them to naturally act generously themselves.

Thus game designers focusing on Generocity would need to provide rules, goals and narrative that emphasise:

- **Offering opportunities for generosity in-game** (i.e. having NPCs that require goods that are valuable to the player, such as gold or healing items)

- **Creating immediate bonuses easily connectible to the generous action** (i.e. a text box opening saying “Wow! [Insert character name] opened the gates to [insert name of secret area] since you gave him/her [insert valuable object]!”)

- **Making instances in which the player is the recipient of generosity** (i.e. wealthy allies in a resource management game giving the player bonuses to start out, or an NPC giving supplies to the player as opposed to the player having to purchase them)
2.7 Cooperation (being cooperative with others)

2.7.1 Generalities about Cooperation

Commonly, cooperation is described as competent social behaviour that causes many positive consequences. On the other side of the spectrum lies competition, which is commonly viewed as harmful and leading to negative consequences for children’s psychosocial development. Despite this common understanding, children are repeatedly encouraged to be competitive in school or in their sportive activity. Moreover, although collaboration might seem better than competition at a first glance, research has shown that both cooperation and competition can be positive. In Fülöp, Ross, Pergar Kuscer, and Razdevsek Pucko (2007)’s research, primary children were asked to comment on competition and cooperation. Children described competition at times as exciting and fun, and suggested that competition allows someone to find out how good they are. They saw competition as motivating people to try. The children also mentioned that they disliked competition in case of cheating and when the pressure to win was too high. Cooperation was seen as enjoyable when participants help each other and discuss things but not enjoyable when the people involved are not friends, or if there is arguing, or if not all the team members make an effort.

Competition and cooperation can be both harmful and healthy for children’s development, depending on how it is used. For instance, research has shown that there are different forms of competition and cooperation, some healthier than others. Some form of competition/cooperation might refer to the social situations (e.g. a tennis tournament) while other refer to the psychological states of the participants (e.g. throwing the ball harder in a friendly practice tennis game to be seen as the best) (see Schneider, Benenson, Márta Fülöp, Mihaly Berkics, and Mónika Sándor, 2011 for more details). Moreover, within psychological state, two types of competition have been proved to have different effect on peers (Ryckman, Libby, van den Borne, Gold, and Lindner, 1997). They explain that some people who exhibit a personal development competitive attitude generally try to improve their skills regardless of the outcome, which can be positive as it can increase motivation; whereas those who manifest a hypercompetitive attitude usually possess a strong desire to achieve a specific outcome regardless of the necessary means required, which can sometimes be negative.

Fülöp (2004) also made an interesting distinction based on the goal of the competition. As such, winning and outperforming the other is different from self-improvement or gaining mastery over something. The function can therefore be seen as elimination of the rival in one sense, but also as improvement, motivation, and goal attainment. Finally, the rival in Fülöp’s (2004) definition can be conceived as enemies, opponents to win over or motivators and comparative parties. Therefore, it is clear that competition can both improve academic skills through improved motivation, but also decrease social inclusion in some other cases.

With increasing age, children learn the difference between competitive and cooperative choices in terms of maximizing their long-term gains in a specific situation (McClintock, Moskowitz, & McClintock, 1977; Toda, Shinotsuka, McClintock, & Stech, 1978). Moreover, research has shown that the preference toward competitive choices in both experimental settings and everyday school settings increases with age (e.g., Kagan & Madsen, 1971; McClintock & Moskowitz, 1976; Strein, 1986; Graves & Graves, 1984; Owens & Barnes, 1982).

The following section develops how cooperation (and competition when used in the right way) can help academic achievement and social inclusion. The third section develops how to design games that can be both competitive enough to increase motivation and that involve cooperation to increase social inclusion.
2.7.2 Cooperation, academic achievement and social inclusion

Stanne, Johnson, and Johnson (1999)’s meta-analysis on the circumstances in which cooperation and competition are useful, found that the effect of cooperation and competition on performance is strongly influenced by the structure of the task. For instance, when an activity requires interdependence, cooperation seems to be the most useful for performance. However, if interdependence is low and the competing parties cannot interfere with each other’s performance, outcomes or rewards, then competition seems to be more advantageous. Therefore, when competition is structured appropriately (i.e. not too much emphasis on winning, an equal opportunity to win for ‘opponents’, and an ability to estimate performance relative to one’s opponent), it has the same effect on performance as cooperation and can be even more powerful as it increases motivation.

To summarise, competitive contexts can increase the desire to do well, give a sense of excitement and can promote intrinsic motivation (Epstein & Harackiewicz, 1992). Therefore, competition can have a positive effect on academic achievement because it provides an exciting challenge and increases the motivation for an individual to do well. Moreover, the positive feedback that is received at the end of a competition can also increase intrinsic motivation (Tauer & Harackiewicz, 1999), increasing again academic performances. However, competition can also be damaging, particularly where competition is a zero-sum game, where one’s achievement is detrimental to others, in terms of social inclusion in case of hypercompetitiveness (Tassi, Schneider, & Richard, 2001).

Cooperation on the other hand is often shown as increasing academic achievement and better relationship with peers (Roseth, Johnson, and Johnson (2008)).

Therefore, for the ProsocialLearn digital games purposes, a mix of subtle personal development competition would be helpful to increase motivation in games teaching cooperative skills.

2.7.3 How to implement Cooperation in digital games?

Once more, cooperation is already implicit in many popular entertainment-based games today, particularly in the wildly popular MOBA genre (i.e. League of Legends, DOTA2, etc.) in which cooperation is the key to victory against the opposing team. Most modern RPG-style games also include a “co-op mode” in which players can team up with their friends to complete the storyline. Internet access has also opened up venues for both cooperation and competition in a variety of different gaming styles, including MMORPGs (i.e. Guild Wars, World of Warcraft, etc.), first-person shooters (FPS; i.e. Counterstrike, Halo franchise, etc.) and even RPGs. Probably the best example of successful implementation of cooperation in video games applying to a young audience, however, is the Super Mario Bros U game for the Wii U. In this game, one player controls Mario while the other controls a small star-like creature that can stun enemies and make blocks appear on the screen, among other things. In order for Mario to successfully complete levels and get to secret locations in-game, the players must coordinate their movements and work together. A similar mechanic would be useful to encourage cooperation in real-time games like platformers, certain strategy games, and RPGs.

However, the aforementioned research shows us that the target age group influences the degrees of cooperation and competition that should be present in-game. For younger crowds, specifically before age 7, games should focus exclusively on cooperation, as demonstrated by the mechanic in the Super Mario Bros. Wii franchise. It is worth noting, however, that the second player in that series also has the possibility to hinder the first player’s progress by placing blocks in inconvenient locations; it
would be wise to eliminate the possibility of being a nuisance for the under 7 group, as they tend toward the selfish option when such an option is given. Another example of a game-style that could be adapted to the digital medium is the board game Terra, published by Days of Wonder. In this game, players act as world leaders and work together against the game to save the world from various crises. Playing as a team against the game would work for both the below 7 and over 7 age groups, as the competition component is not between players, but against something inanimate. This also creates a high level of interdependence, encouraging cooperation’s benefits while still retaining the engagement brought by competition. Finally, larger teams, particularly those that are classroom-wide, encourage less popular or socially active children to participate and cooperate, lessening the problem behaviours associated with rejection (Gelb & Jacobsen, 1988).

Thus game designers focusing on Cooperation would need to provide rules and goals that emphasise:

- Either gameplay that involves at least two players, or co-op modes in single player games
- Competition between player and game, as opposed to between players
- Inability to hinder teammates for children under 7
- High levels of interdependence in-game (i.e. players cannot progress unless they cooperate)

### 2.8 Emotional intelligence (understanding the emotions of others)

#### 2.8.1 Generalities about Emotional intelligence

Emotional Intelligence corresponds to the ability to identify, assess, and control the emotions of oneself, of others, and of groups in order to guide ones thinking and actions. Although it is not a core domain of prosociality per se, it plays an important role in prosocial behaviour.

There is lasting disagreement over how to define and measure emotional intelligence, and how significant the concept of emotional intelligence in itself is in predicting various aspects of academic and life achievements. One difficulty in defining emotional intelligence is that there seems to be two predominant perspectives in research: one looking at *ability* and the other one looking at *trait* (see Petrides and Furnham, 2000, 2001). In this section, we will only focus on ability, that is, a cognitive ability involving the cognitive processing of emotional information, whereas trait is more related to temperament or personality. In the current section, we will use Mayer et al (2000)’s definition that suggests a four-branch model of EI encompassing the subsequent psychological processes: (1) an awareness of one’s own and others’ emotions and an ability to monitor emotions and express them appropriately; (2) an ability to use emotions to facilitate thought and to guide selective attention; (3) an ability to understand emotions; and (4) the ability to regulate emotions.

There is now accumulating research that shows relationships between EI (trait and ability) and later life success, indicated by a diversity of outcome measures including academic achievement among adolescence and adults. However, only a few studies have been conducted with primary-aged children (those younger than 12) because of a lack of suitable measurement tools for this age group. They are defined below.

#### 2.8.2 Emotional intelligence, academic achievement and social inclusion

Studies show that children who score highly on EI (see Appendix 1 to see the questionnaire to measure EI) are rated as less aggressive, more prosocial and more empathic by their peers. Moreover, amongst children with low IQ, those with higher EI are found to perform significantly better than do those with lower EI (Svetlana, 2007).
Figure 2 shows how both EI and IQ predict school performance.

![Figure 2: Structural equation model with standardized maximum likelihood parameter estimates. EN= English, MA= Maths, SC= Science, KS3 = Key Stage 3 assessment, GCSE = General Certificate of Secondary Education assessment. From Pertrides et al. 2004, Personality and Individual Differences.](image)

To summarise, EI seems to have an influence on both social behaviour (leading to social inclusion) and academic achievement.

2.8.3 How to implement Emotional intelligence in digital games?

Emotional intelligence is evidently a broad, relatively vague concept. However, the majority of its facets are encompassed by other dimensions of prosociality; for example, dealing with emotions in others is mostly covered by empathy (see section above). Where emotional intelligence becomes a distinct concept is in its addressing the self. Children with a high EQ (as opposed to IQ) are not only aware of others’ emotions, but also their own; they are able to correctly identify what they are feeling and use positive strategies to regulate these emotions. Not only this, but high-EQ individuals are able to seek out things that make them happy and use good moods to their advantage (Davies, Lane, Devonport, & Scott, 2010). Indicators of high EQ are thus not always easily observable. That said, students high in EQ will generally:

- Be able to accurately describe their own feelings
- Persevere in the face of challenges
- Attempt to cheer up unhappy peers
- Be generally positive (i.e. in a good mood)

Some schools already implement more traditional methods to encourage EQ development; one of these initiatives is “circle time”, in which young people are able to share emotionally-charged issues that concern them, and are coached in positive ways of listening and responding to each other. Other schools teach specific relaxation techniques to calm down during stressful situations, while yet others teach conflict resolution in the curriculum. These teaching methods could be imported into the digital sphere with relative ease. Circle times could be implemented into RPGs in the form of narratives. Allies could gather around a campfire and discuss emotional topics in a cut-scene, for example; players would then have the opportunity to input their avatar/the protagonist’s feelings
into the conversation as well via a response-selection in the style of the Elder Scrolls series. Protagonists in RPGs would also be able to resolve inter-party conflicts using a similar mechanism. In short, characters in-game can act as classmates in the process of learning correct identification of emotions in the protagonist/child.

To determine whether the EQ training is working, the brief emotional intelligence scale (BEIS-10) by Davies et al. (2010) could potentially be employed, with light modification to make the vocabulary more child-friendly. Another potential method would be using mood induction in-game. For example, having a particularly difficult puzzle placed after a tragic event in the narrative, such as the death of a party member. This would test perseverance in the face of challenge as well as the capacity to regulate emotions in order to complete a task. Another option would be a side-quest involving the need to cheer up a character. Seeking out the quest in itself could denote a desire to encourage positive emotions in others. Completing the quest successfully would indicate the capacity to regulate emotions in others.

Thus game designers focusing on EI would need to provide rules and goals that emphasise:

• Strategic placement of challenges after emotional events for higher EQ students, or as the story progresses (ex: for students with low EQ, a challenging puzzle would occur after a victory in-game, while a student with high EQ would have to face challenges such as difficult puzzles after an emotionally challenging moment in-game, say the death of a character)
• Creation of emotion-based challenges, such as conflict resolution and cheering up emotionally distraught characters
• Creation of characters with emotional depth to encourage authentic emotional interactions

2.9 Expressive Behaviour and Prosociality

To the best of our knowledge, there is no specific research pertaining to observable physical cues of prosocial behaviour. One does not necessarily take an open stance when being generous, for example, nor does one consistently furrow one’s brow when acting compassionate. The only facet of prosociality that has been linked with expression is truthfulness (see Paul Ekman’s work, http://www.paulekman.com/journal-articles/). Studies of truthfulness and expression, particularly facial expression, are based largely on emotion (Keltner & Ekman, 2000; Ekman, 2003). There are key emotional states that have been linked to particular facial expressions: anger, disgust, fear, happiness, and sadness (Keltner & Ekman, 2003; Rosenberg & Ekman, 1993). These emotions and their indicators are thought to be universal, although contempt and surprise are also occasionally included in this group (Ekman & Friesen, 1986; Keltner & Ekman, 2003; Rosenberg & Ekman, 1993). It is the presence and absence of these emotions that has the potential to indicate truthfulness or deceit (Ekman, 2003). In the case of high-stakes situations (ex: facing imprisonment), congruence between what a person is saying and the emotion displayed on their face seems to indicate truthfulness. Take the following example: a potential murderer is being interviewed and they are verbally expressing their sadness over the victim’s death. If their face betrays happiness in some way, as indicated by the universal facial expressions for key universal emotions (see Cornell University, http://www.nbb.cornell.edu/neurobio/land/oldstudentprojects/cs490-95to96/hjikim/emotions.html), this could indicate that they are not telling the truth, whereas if their face conformed to the expectations of sadness, this would indicate truthfulness. It is worth noting, however, that in the real world, this betrayal of emotion can take the form of micro-expressions, mere twitches in the face that even trained professionals can have difficulty detecting (Ekman, 2003;
O’Sullivan & Ekman, 2004). If this research is to be used to detect truthfulness in children, facial recognition software employed would have to be extremely sophisticated (Stewart Bartlett, Hager, Ekman, & Sejnowski, 1999). If, however, the plan is to use this research to create realistic deception scenarios for characters in-game, these expressions could be exaggerated to make them more obvious to students playing said game.

As for creating realistic emotions for in-game characters on a more general scale, the aforementioned guide created at Cornell for modelling emotion should prove useful. It is also worth noting that some tests indicate that seeing the eyes alone are enough to detect emotion in another person (see Simon Baron-Cohen’s test, https://www.questionwritertracker.com/quiz/61/Z4MK3TKB.html); therefore, game designers focusing on programming facial expressions into characters should pay particular attention to correctly modelling characters’ eyes. There is minimal research that has gone into morality and physical positioning, although this has been heavily criticised by the psychological community (Carney, Cuddy, & Yap, 2010; Lee & Schnall, 2014; Yap, Wazlawek, Lucas, Cuddy, & Carney, 2013). The idea is that adopting an open position (i.e. arms akimbo, legs hip distance apart) indicates feeling power in a situation while adopting a closed position (i.e. arms folded, legs crossed, head down) indicates feeling victimized; this could potentially influence the way children respond to and identify with characters in these physical positions.

Moreover, some non-verbal behaviour have been identified as signs of prosocial behaviour. For instance, head tilts, gaze, smile, head nods, blush, oblique eyebrows and laughter have been associated with social engagement, submissiveness, concern over social evaluation, concern for others and cooperativeness (Bachorowski & Owren 2001; Eisenberg et al. 1989; Feinberg et al. 2012b; Gonzaga et al. 2001, 2006; Kogan et al. 2011). Table 1 summarises these findings. However, it is also important to note that there is no one single signal of prosocial intention and the context is of primary importance to determine the intention of individuals.

<table>
<thead>
<tr>
<th>Nonverbal behavior</th>
<th>Significance</th>
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<tbody>
<tr>
<td>Head tilts, gaze, smile</td>
<td>Social engagement</td>
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<tr>
<td>Head nods</td>
<td>Deference, submissiveness</td>
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<tr>
<td>blush</td>
<td>Concern over social evaluation</td>
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<tr>
<td>Embarrassment display</td>
<td>Desire to appease, reconcile</td>
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<tr>
<td>Oblique eyebrows</td>
<td>Concern for other</td>
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<tr>
<td>Laughter</td>
<td>Warmth, cooperativeness</td>
</tr>
</tbody>
</table>

Table 1 - Nonverbal signs of prosocial character. From Keltner, Kogan, Piff, Saturn. The Sociocultural Appraisals, Values, and Emotions (SAVE) Framework of Prosociality: Core Processes from Gene to Meme. The Annual Review of Psychology (2014)

2.10 Summary of the PLOs

To summarise, and although research tends to study prosociality as a whole, prosociality can be described by the 7 core domains below: empathy, emotional intelligence, trust, fairness, compassion, generosity and cooperation.
Some domains have been more researched than others, and sometimes one domain has been mixed with another (such as empathy and compassion; or fairness and generosity).

Prosociality in general has been linked with higher academic achievement and social inclusions. Table 2 summarises each domain and whether they have directly or indirectly been shown to influence academic achievement and/or social inclusion. Table 3 summarises how exactly to implement each domain in digital games.

<table>
<thead>
<tr>
<th>Core domains</th>
<th>Academic achievement</th>
<th>Social Inclusion</th>
<th>Digital games</th>
</tr>
</thead>
</table>
| Empathy       | YES: Direct           | YES:             | - Identification of emotions
|               |                      |                  | - Describe cause and effect of emotion
|               | Indirect through social skills | | - Respond to other’s emotions |
| Trust         | YES: Better academic performances | YES: Helping others and low loneliness | - Cooperative games
|               |                      |                  | - Backstories
|               |                      |                  | - Delegation of tasks |
| Fairness      | More research is needed but we suggest YES | More research is needed but we suggest YES | - Clear connection between unfairness and outcomes
|               |                      |                  | - Opportunity to act fairly after unfair behaviour
|               |                      |                  | - Completion optional quests |
| Compassion    | More research is needed but we suggest YES | More research is needed but we suggest YES | - Backstories with compassion
|               | Self compassion      |                  | - Compassion to suffering characters
|               |                      |                  | - Completion optional quests
|               |                      |                  | - Caring for a pet |
| Generosity    | More research is needed but we suggest YES | More research is needed but we suggest YES | - Opportunities for generosity
|               |                      |                  | - Immediate bonuses for generous actions
|               |                      |                  | - Player being the recipient of generous action |
| Cooperation   | YES                   | YES              | - 2 players minimum
|               | Also competition to increase motivation |                  | - Competition between players and the game not between players
|               |                      |                  | - High level of interdependence |
| EI            | YES: But more research is needed | YES: Less aggressive and more prosocial | - Emotional events
|               |                      |                  | - Emotion based challenges
|               |                      |                  | - Characters with emotional depth |

Table 2 – Summary of the core domains of prosociality
<table>
<thead>
<tr>
<th>Prosocial Facet</th>
<th>Game Mechanics</th>
<th>Game Examples</th>
</tr>
</thead>
</table>
| **Empathy**     | • Gradual change from characters similar to the protagonist to characters radically different from the protagonist  
• Timing of interactions with emotionally-distraught characters  
• Responding to emotional characters correctly when interaction is unavoidable | • N/A |
| **Trust**       | • Selection of witness testimony based on reliability/honesty in crime-themed game  
• Delegation of tasks in resource management scenarios to reliable people  
• Trusting one’s partners and cooperating to achieve a goal | • League of Legends (coordinating a team to reach a goal)  
• World of Warcraft (coordinating a team to complete a challenge, ex: guild raids) |
| **Fairness**    | • AI opponents/teammates that react to fairness/unfairness reciprocally  
• Shops with adjusting prices based on stealing/purchasing  
• Additional options unlocked for fairness, i.e. side quests | • League of Legends (lack of fairness – “kill-stealing” with impunity)  
• Crash Bandicoot - Crash Team Racing (bosses have an unfair advantage, i.e. unlimited items) |
| **Compassion**  | • Pet simulation to encourage caring for another being  
• Receiving compassion in the form of backstory  
• Make challenges that are too difficult to complete in one try, followed by encouragement to train self-compassion  
• Optional compassion, followed by bonuses if the player chooses to be compassionate | • Tamagotchi (pet simulation)  
• Nintendogs (pet simulation)  
• Pokémon (pet simulation)  
• Final Fantasy IX (final boss fight – compassion to a villain)  
• Ori and the Blind Forest (receiving compassion)  
• Fallout 3 (beginning the game in a helpless situation) |
| **Generosity**  | • When training fairness, make one unfair option that is generosity  
• Make item-giving sacrificial for the player (i.e. give away useful items)  
• Create generous characters in-game that help the protagonist | • Lufia II: Rise of the Sinistrals (Alunze quest reward)  
• Super Mario RPG: Legend of the Seven Stars (Fireworks item)  
• Skyrim (Blessing of charity bonus for giving money to the poor) |
| **Cooperation** | • Co-op modes in-game | • DOTA2 (cooperating to win the game) |
• Play against the game instead of against each other
• Guild Wars (cooperating within a guild to defeat a boss or rival guild)
• Counterstrike (cooperating to outwit the opposing team)
• Super Mario Bros U (gamepad co-op mode)
• Terra (Cooperative board game)

Emotional Intelligence
• Emotional narratives in cut-scenes
• Opportunity to input protagonist’s feelings in discussions between characters
• Solving inter-party conflicts
• Mood induction via tragic situations in-game followed by challenging puzzles
• Elder Scrolls (response selection in conversation)
• Chrono Trigger (Campfire scene – circle time simulation)

Table 3 – How to implement the core domains of prosociality into digital games

Finally, Figure 3 below from CASEL 2003 demonstrates the role of social and emotional learning (that comprises prosociality) in academic development and social inclusion.

Figure 3 - The role of Social and emotional learning in academic achievement. From Clarke and Barry, The Link between Social and Emotional Learning and Academic Achievement.¹

3 Contextual Factors affecting prosocial learning

There are a large number of characteristics of individuals that are correlated with the core prosocial domains developed in the earlier sections. For instance, sex, class membership, age, cardinal position, attachment style, parenting style, teacher-student relationship, and finally traits such as temperament and personality can be thought of as playing a mediating or moderating role in children’s prosocial learning.

The following sections develop some of these factors and present the questionnaires that can be used to measure such traits in order to make the prosocial games modelled to the individual children’s needs. These questionnaires might not all be used as an additional research work. Instead, they might be used for calibration purposes (relationship between stated traits and measured traits with the sensors) and/or might be included question by question within the games.

3.1 Temperament

3.1.1 What is temperament and how does it affect prosociality?

Temperament refers to “constitutionally based individual differences in emotional reactivity and self-regulation” (Rothbart & Sheese, 2007, pp.331). Temperament is thought to be rooted in the biological system and defined from early infancy (Goldsmith et al., 1987; Rothbart & Bates, 1998). Temperament in 7-10 years old can be measured using a questionnaire developed by Rothbart: the Temperament in Middle Childhood Questionnaire (TMCQ) (Simonds & Rothbart, 2005). The TMCQ is composed of 17 dimensions: activation control (e.g. ‘can make him/herself smile at someone, even when s/he dislikes them’); activation level (e.g ‘likes to be physically active’); affiliation (e.g. ‘is warm and friendly’); anger/frustration (e.g. ‘gets mad when provoked by other children’); assertiveness/dominance (e.g. ‘likes to be in charge’); attention focusing (e.g. ‘needs to be told to pay attention’); discomfort (e.g. ‘is quite upset by little cut or bruise’); fantasy (e.g. ‘likes to make up stories’); fear (e.g. ‘is afraid of fire’); intensity pleasure (e.g. ‘likes exploring new places’); impulsivity (e.g. ‘says the first thing that comes to mind’); inhibitory control (e.g. ‘can stop when told to stop’); low intensity pleasure (e.g. ‘likes quiet reading time’); perceptual sensitivity (e.g. ‘notices the sound of birds’); sadness (e.g. ‘tends to become sad if plans don’t work out’); shyness (e.g. ‘is shy with new people’); and finally soothability (e.g. ‘cheers up quickly’).

Research has shown that temperament may have a direct effect on social development. For example, a child rating high on temperamental inhibition might tend to be socially withdrawn. Furthermore, when added together, temperament dimensions that would not have an effect on social behaviour on their own can add up to important consequences. For instance, scoring high on reactivity and poor on regulation would together contribute to the development of aggressive behaviour. However, no clear temperamental traits have been linked with better or poorer prosocial skills.

Temperament may also play an indirect role on a child’s social skills by acting on the environment, such as for instance the response from other peers, teachers and family members. For instance, a cheerful sociable child is likely to experience more positive responses than a negative and reactive child who might elicit more punitive discipline, which in turn may increase risk for aggression. Another instance would be of a child with poor self-regulation skills and living in a hostile parenting environment. This child might show anti-social behaviour whereas not all children with poor self-regulation would. Mostly, research suggests that temperament in itself might not predict direct prosocial outcome; whereas the relationship with the environment may affect, for better or for
worse, children’s prosociality. For example, children scoring highly on emotional negativity may be more adversely affected by poor parenting than those with less negative affect, but they may also benefit more from positive parenting.

This suggests that although measuring children’s temperament to make the ProsocialLearn digital games more user oriented might help, more variables such as the environment needs to be taken into account. Moreover, unfortunately, no research has yet investigated the role of each specific component on prosocial behaviour.

### 3.1.2 How to measure temperament in childhood?

As mentioned formerly, temperament in 7-10 years old can be measured using a questionnaire developed by Rothbart: the Temperament in Middle Childhood Questionnaire (TMCQ) (Simonds & Rothbart, 2005). Because young children can have difficulties reporting their own behaviours due to poor self-awareness and vocabulary (Winne & Perry, 2000) parent reports about their child’s behaviour are usually used in the literature. Although findings from the literature indicate that parents may not be objective in providing accurate answers to questionnaires regarding their children (Seifer et al. 1994), parent report is now commonly accepted as a measure of children’s self-regulation (Rothbart, 1981).

See Appendix 1 for a detail of the TMCQ.

### 3.2 Personality

#### 3.2.1 Definition and how does it affect prosociality

The basic structure of personality has been consented over the years to consist of five factors, which are referred to as the Big Five (e.g. John & Srivastava, 1999). These factors are (1) **extraversion** which refers to aspects such as activity, enthusiasm, assertiveness, and self-confidence; (2) **agreeableness** which reflects concern and sensitivity towards others and their needs; (3) **conscientiousness** which has to do with dependability, orderliness, precision, and the fulfilling of commitments; (4) **neuroticism** which pertains to a proneness to experience feelings of anxiety, depression, discontent, and anger; and (5) **intellect/openness** which is concerned with intellectual functioning, creativity, imagination, and social and cultural interest.

Individual differences in personality at an early age shape a child’s life experiences and influence the way in which the child responds to the environment (Caspi, 1998). Evidence shows that personality may add to the predictive power of evaluations of children’s developmental outcomes, such as their adjustment, delinquent behaviours, conduct disorders, and risk behaviours (Ehrler, Evans, & McGhee, 1999; Graziano & Ward, 1992; John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994). Moreover, personality has also been shown to be related to general intelligence (Chamorro-Premuzic & Furnham, 2005) as well as academic outcomes (Furnham, Chamorro-Premuzic, McDougall, 2003). For instance, a large number of studies have found that academic outcomes, as well as general intelligence are related to Agreeableness and Conscientiousness (Busato, Prins, Elshout, & Hamaker, 2000; Musgrave-Marquart, Bromley, & Dalley, 1997; Paunonen & Ashton, 2001), as well as Openness (Paunonen & Ashton, 2001). Neuroticism has also been found to be positively related to performance in relatively non-stressful environment (ChamorroPremuzic, & Furnham, 2003; Kappe, & van der Flier., 2009).

Finally, personality has also been related to prosocial behaviour. Particularly, **agreeableness has been suggested to account for selfish vs. prosocial behaviour**, such as reflecting the differences in the motivation to cooperate vs acting selfishly in resource conflicts (Denissen & Penke, 2008).
3.2.2 Questionnaire to measure personality

A lot of questionnaires have been created to measure personality in children. However, they do not all measure all the facets of interest or the research supporting their use is scarce.

Two questionnaires however seem to be equally good to measure personality in childhood: the BFQ-C, or the Big Five Questionnaire for Children; and the ICID-s, or the Inventory for Child Individual differences.

Because only the BFQ-C is available in both English and Italian, we suggest the use of this one for this project. The BFQ-C measures the basic personality dimensions of energy/extraversion, agreeableness, conscientiousness, emotional instability, and intellect/openness in youths.

See Appendix 1 for a detail of the BFQ-C questionnaire

3.3 Attachment style

3.3.1 Definition and how does it affect prosociality

Attachment in children is defined as an emotional long-lasting bond that a child forms with an attachment figure (usually the mother) who is not interchangeable with another person (Ainsworth, 1989). In typical development, a child will at first wish to maintain proximity and contact with the attachment figure and will progressively become more detached and lean towards independence. All children are expected to form attachments, even if the care provided by that figure is less than ideal (Bowlby, 1969).

Attachment does vary in quality and there are 3 main types of attachment, some healthier than others: Secure (e.g. ‘I usually believe that others who are close to me will not leave me’), anxious (e.g. ‘I’m sometimes afraid that no one really loves me’) and avoidant (e.g. ‘I find it uncomfortable and get annoyed when someone tries to get too close to me’).

Attachment can help give children an ‘internal working model’, or mental representation about the world (Bowlby 1973). These representations have been conceptualized as relationship rules that script how a child will view him/herself, the other (friends or family) and their view of the relationship. These scripts guide one’s actions and beliefs about what to expect from the social world (Bretherton & Munholland, 2008). For example, children raised in a sensitive and responsive manner would have an internal representation of themselves as worthy of care.

Attachment therefore has a direct role on social behaviour. Research has shown that securely attached (preschool) children, compared to insecurely attached children, use better strategies to regulate negative emotions in a waiting paradigm (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002). They also display emotions more openly (Lutkenhaus, Grossmann, & Grossmann, 1985), show more positive affect with peers (Park & Waters, 1989; Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984), and have better understanding of emotions (Laible & Thompson, 1998). Additinal research on middle school children showed that more securely attached children exhibit more positive mood, use more constructive coping strategies, and show better emotional adaptation in classrooms (Granot & Maysesless, 2001; Kerns, Abraham, Schlegelmilch, & Morgan, 2007; Sroufe, Egeland, & Carlson, 1999). Taken together, these results show that attachment can have a strong impact on children’s social behaviour.

Moreover, studies have shown that attachment security is also linked to children’s peer relationships. For example, securely attached children are more socially competent (Booth-LaForce & Kerns, 2008), have a better friendship quality (Kerns, 2008), and might be more popular (Bohlin et
al., 2000), although popularity has not been consistently been associated with attachment (Lieberman et al., 1999).

These studies show that attachment can play a role in children’s prosocial development, and that secure attachment is positively linked with prosocial behaviour.

3.3.2 Questionnaire to measure attachment

The Attachment Style Classification Questionnaire for Latency Age Children (Finzi-Dottan, 2012) can be used to measure attachment style in 7-10 year olds.

See Appendix 1 for the detail of the questionnaire.

3.4 Demographics

3.4.1 Age

Recent studies have found that even young preschoolers behave altruistically in simple economic games, and their altruistic behaviour increases consistently from preschool years to early school age (Blake & Rand, 2010; Benenson, Pascoe, & Radmore, 2007; Fehr, Bernhard, & Rockenbach, 2008). However, although age is having an impact in terms of preschool vs middle school vs adolescence vs adults, no age effect is thought to occur in the 7-10 age group.

3.4.2 Gender

Theory would predict that boys and girls differ in prosocial activities, as they do in many personality and social characteristics. However, in the majority of studies, no consistent gender differences have been found (e.g. Bar-Tal et al., 1982; Dunn & Munn, 1986; Yarrow & Waxier, 1976). It is suggested that because many more parameters such as the environment play a larger role, gender effect is somewhat diluted in this. For instance, some research found an effect of gender on prosociality among siblings (Summers, 1987), where girls were seen as more altruistic. However, these results might be artificial, due to the gender-role stereotype that females are more altruistic than males, and that girls are usually viewed as more prosocial than boys by peers and teachers (Berman, 1980; Block, 1973; Shigetomi, Hartmann, & Gelfand, 1981). Moreover, some observational instruments using characteristic related to girls to measure prosociality (such as ‘comforting a younger child’) might also explain why girls could potentially be seen as more prosocial. The work done on adults in laboratory settings (without the use of questionnaire) support this hypothesis where adult males have actually been found to be more helpful than females (Eagly & Crowley, 1986), particularly when measuring such things as ‘helping to change a tire’ or ‘picking up a hitchhiker’. In contrast, adult females have been found more prosocial when the situation measured involved giving psychological assistance and helping friends and acquaintances.

In summary, it seems that even in childhood, there is no clear and consistent evidence of gender differences in prosocial behaviour. The only difference would be in what type of prosocial behaviour is measured. For instance, girls are more likely to help and nurture others as society seems to favour this kind of behaviour to girls; while boys are more likely to be reinforced for helping behaviours that involve some risk or involve helping females.

3.4.3 Income: SES

Family socioeconomic status does not seem to have any reliable and consistent effect on children’s prosocial behaviour. Some researchers have found no influence of social class differences on helping, sharing, or cooperative behaviours (DePalma, 1974; Nelson & Madsen, 1969). Other studies
however found differences with high SES children being more prosocial (Berkowitz, 1968; Payne, 1980; Raviv & Bar- Tal, 1981) or actually showing that children from family with low socioeconomic status are more prosocial (Friedrich & Stein, 1973; Knight & Kagan, 1977). It has been suggested that the reason for the inconsistent findings is due to the large range of prosocial behaviour as well as the influence of other factors such as the environment. Mainly, research supports the fact that individuals with low SES tend to give more (Piff, Kraus, Côté, Cheng, Keltner, 2010); although this result is more inconsistent in children. For instance, a Chinese study with children (Rochat and Dias) showed that low SES children donated more sweets and stickers to others compared to higher SES children. Benenson et al (2007) however conducted a study in the UK and found that children aged nine from higher socioeconomic status (SES) environments in England behaved more altruistically than those from lower SES contexts in the dictator game.

Moreover, a recent meta-analysis showed that low SES was associated with more anti social behaviour (Piotrowska, Stride, Croft & Rowe, 2015), although they warned that the results obtained from the various studies may have depended on the antisocial subtype under investigation and the design of the study.

### 3.5 Culture

Cultural values can play a role in prosociality. Two main types of culture have been described: individualistic cultures, which value independence, competition, achievement and self interest; and collectivist cultures which value mutual interdependence, loyalty and group membership. For instance, the UK and the US are seen as individualistic, whereas Kenya or Mexico are seen as collectivist. Research has shown that individualist cultures raise less helpful, co-operative children due to need to compete in later life (capitalism). However, research has also demonstrated that both types of cultures might actually be equally prosocial, and that it is the reason behind prosociality that might differ. For instance, individualist culture might feel motivated by personal rewards (such as feeling good about oneself), whereas collectivist cultures might feel motivated by continued survival of group and possible reciprocation. Moreover, another problem of conducting research with different cultures is to deal with differences in languages and social norms, so cross-cultural research is still one step behind what is needed.

To summarise, and although culture might play a role, more research is needed to confirm which role it exactly plays. Moreover, the cultural values in the different countries of the European Union are quite similar (in terms of Western culture) so we do not expect to see any major cultural effect.

### 3.6 Family

Research on the relationship between family size and/or ordinal position and prosocial behaviour has been very inconsistent.

First regarding family size, no clear-cut results exist. Indeed, while some researchers found that family size and sharing behaviour are unrelated (Dreman & Greenbaum, 1973; Gelfand et al., 1975; Handlon & Gross, 1959). Some other studies found that small family size is positively associated with helping behaviour (Staub, 1971a,b) and that growing up in a large family may encourage generosity (Benson et al., 1980; Ribal, 1963; Sawyer, 1966; Ugurel-Semin, 1952) and sharing (Dreman & Greenbaum, 1973).

Second regarding the influence of ordinal position on prosociality, the review of the literature yields again inconsistent results. For instance, one study showed that second borns were more altruistic than firstborns (Raviv, Bar-Tal, Ayalon, & Raviv, 1980); while another study conducted with another
sample (American instead of Israeli families) found that firstborn or older siblings were actually more likely than middle or younger children to help in a situation of distress and to donate generously (Staub, 1971b). One consistent finding is however that only-children or children being the youngest in a family tend to be more egoistic than others, and offer less help and support to peers (Whiting & Whiting, 1975).

Therefore, although for research purpose it might be interesting to get data on the family size or cardinal position, it might not get any influence on prosocial learning, apart from maybe training only-children and youngest of a family to be more prosocial.

3.7 Characteristics of the beneficiary

Although a very small amount of research has been conducted with children on such parameter, the research with adults seems interesting to design games that will make prosocial learning better for children. A variety of characteristics of the potential recipient might indeed affect children’s helping or sharing behaviour such as the recipient’s needs, gender, relationship to the child, and demographic and social characteristics.

Research has shown that adults consider the characteristics of the potential beneficiary when making the decision whether or not to assist someone. They are for instance more likely to assist friends than strangers and helpless people than people considered as undeserving (Berkowitz & Daniels, 1963; Schopler & Matthews, 1965).

The situation where the prosocial behaviour takes place also can have an influence. A large amount of research shows that an adult is more likely to help someone in distress if the adult is unaccompanied (rather than in a group) (Latane & Nida, 1981). It has been hypothesised that the failure to help in a group situation may be due to fear of negative evaluation by others if the person misunderstands the situation and offers help unnecessarily for example. The person might think that if there really is something wrong, the others in the group should have helped. Research conducted in children shows a far murkier picture. For instance, one study found that young children were more likely to assist someone in distress if they were with a peer, whereas older children helped regardless of the group situation. The authors suggested that the presence of a peer might have reduced young children’s fears and inhibitions and thus increased their helping; whereas older children may be inhibited by their concern about the peer’s evaluation, like it is the case in adults (Staub, 1970). In another study, however, children who were with a peer helped more than did those who were not with a peer, irrespective of their age (Peterson, 1983). The difference in the findings of these two studies may have been due to the difference in the experimental setting as in the second study, the pair (helper – group) were separated by a screen and could not easily communicate with each other which may have reduced children’s concerned with the peer’s approval (Peterson, 1983).

In summary, it might be a good idea to create a digital game where the children can help in different group settings (they know the person or not; they are in a group or not etc) and to focus on where the children have difficulties for the rest of the digital games.

3.8 Summary of the Contextual Factors affecting prosocial learning

Table 4 summarises the findings from the Contextual Factors that might influence prosocial learning. Generally, research findings have been very inconsistent so it might be difficult to create a personal profile for each child playing the games. However, if such questionnaires are implemented, then this will be valuable data for research purpose as the literature is in need for such data. We suggest that researchers could measure any or all the variables listed below when
collecting the data to show the impact of the digital games in prosocial learning as such data will be immensely valuable for the research sphere on prosociality. However, for time constraint reason, we understand this might not be possible. Indeed, teachers and children will already have a lot of activities to do related to this project and we do not want to over load them with questionnaires that might not be relevant.

Therefore, we suggest that some of the questions within each questionnaire could be implemented within the video games to learn more about the children’s trait. For instance, asking the children ‘I like to compete with others’ (response with a likert scale) after a competitive game. This item is part of the personality questionnaire so with more questions fitting each games/situation, we could have all a large part of our questionnaire answered. Moreover, these questions could be used to calibrate sensors between stated and observed measures. Indeed, sensors would give information about observed measured (smiling, frowning etc) that we could use to compare with the children’s answer on these questions (‘I usually get angry’ from the personality questionnaire vs sensors measuring angry expression).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Effect on prosociality</th>
<th>For research purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperament</td>
<td>Inconsistent</td>
<td>YES</td>
</tr>
<tr>
<td>Personality</td>
<td>Agreeableness</td>
<td>YES</td>
</tr>
<tr>
<td>Attachment Style</td>
<td>Secure attachment</td>
<td>YES</td>
</tr>
<tr>
<td>Age</td>
<td>Not in 7-10 age group</td>
<td>Maybe</td>
</tr>
<tr>
<td>Gender</td>
<td>Inconsistent</td>
<td>YES</td>
</tr>
<tr>
<td>SES</td>
<td>Inconsistent (low SES more generous but also more behavioural problems)</td>
<td>YES</td>
</tr>
<tr>
<td>Culture</td>
<td>Not within Europe</td>
<td>YES</td>
</tr>
<tr>
<td>Family</td>
<td>Inconsistent</td>
<td>YES: Family size and cardinal position</td>
</tr>
<tr>
<td>Beneficiary</td>
<td>Yes: children should help different groups</td>
<td>YES</td>
</tr>
</tbody>
</table>

*Table 4 – Summary of the contextual factors*
Data from teachers

In order to understand whether prosociality is already being taught in European schools and how receptive teachers would be to such a project, we conducted a small research in different European countries. It was originally planned to only collect data from the direct partners of the projects: Greece, Italy and the UK. However, the group in Italy (PoloEuropa) has long lasting collaborations with more countries that agreed to be part of the testing phase, as an extremely valuable addition to the project. Therefore, this report includes the data from Spain, FYROM and Turkey. These countries can also be included in the testing phase of the digital games once they are developed. Teachers were asked the questions presented in Appendix 2.

4.1.1 Questionnaire

Teachers in the UK (3 reports), Italy (4 reports), Spain (17 reports), Turkey (5 reports), FYROM (5 reports) and Greece (25 reports) completed the questionnaire presented in Appendix A, which was translated into and completed in the teachers’ native tongues. This 23-item questionnaire is divided into five sections: school values (A) helping and cooperating (B), games in learning (C), devices and software (D), and communities, platforms and sources of information (E). Section A addresses school-wide policies and the instruction of kindness and compassion in the classroom. In section B, teachers rate various prosocial constructs on their importance to academic achievement and social integration. Section C asks teachers about ways they use play in the classroom to facilitate learning general academic subjects as well as prosocial skills. In section D, teachers have the opportunity to discuss ways that technology is already implemented in the classroom and greater school as well as ways they foresee its future use. Finally, section E allows teachers to explain how they learn about new educational technologies available. With the exception of the two rating items in section B, all items were in an open answer format.

4.1.2 Results

4.1.2.1 UK

School values seemed to vary considerably across UK institutions, but one constant theme was effective communication. Students are encouraged to use communication skills to resolve conflict and deepen relationships. For the most part, prosocial behaviour and school values are reinforced on the school level via assemblies and in some cases, reward schemes like badges. Typically, in-class lessons about kindness or compassion last approximately 20 minutes, although teachers remark that prosocial behaviours are generally not mandatory and may be taught on a case-by-case basis as opposed to being a statutory curriculum. The Personal, Social, Health and Economic education curriculum (PSHE) is a non-statutory subject, that allows teacher the flexibility to tackle a wide range issues. Empathy and cooperation received the highest rankings for association with both academic achievement and social integration. For academic achievement, these were followed by playing/acting fairly and obedience to social norms. In social integration’s case, the next two were trust and concern for others’ feelings. In all ratings, compassion when seeing someone else suffer was among the least valued options. Teachers report that students would universally benefit from specific education in these areas, but that generally there are only a few particular students that cause problems in the area of kindness or cooperation.

Teachers use a variety of play forms to encourage social norms, including but not limited to roleplaying social scenarios either in person or via puppets, storytelling, board games, or “circle time,” a period in which pupils are seated in a large circle and must take turns sharing verbally or...
physically sharing an item. Use of digital media is, however, limited, but growing. Some teachers have used Espresso and IWB as technological resources, but they lament that they are outdated and “a bit dodgy.” For the most part, teachers seem to stick to traditional children’s games to encourage prosocial behaviour in the classroom.

In terms of physical hardware, teachers seem to have more access to technology than students, although 2013 report by Office for National Statistics noted that 97% of households with children have internet connection and more recent report of 2015 puts a figure of over 80% of UK primary school children having access to tablets and PCs at home. All students seemed to have access to at least a basic desktop computer in the classroom, but only one of three reports mentioned anything beyond that (ipads, laptops, and interactive whiteboard). Use of devices, particularly anything that could connect to the internet, is highly policed in UK schools and strict regulations are enforced that would prevent any outside technology (i.e. personal devices such as smartphones) from getting in.

That said, teachers are also largely dependent on the school for their own technological education, and depending on the school the amount of resources varies. Only one teacher (out of three) reported using anything outside of school-organized means in their teaching; most were strictly attending teacher events (INSET training) or exclusively using school-provided software (Espresso, 2simple, etc.). All teachers’ schools had accessible ICT regulations, and one report said that their school had a dedicated ICT coordinator. The annual British Education and Training Technology (BETT) trade show which represents the suppliers of software and technology in schools had over 500 companies exhibiting software and technologies specifically made for primary school in 2015.

The British Educational Suppliers Association (BESA) forecast UK schools to spend €833 million (£596 m) on ICT kit in 2014/15, a 10% increase on the previous year. Whilst adoption of tables in the United States has grown the fastest, doubling in only one year between 2013 to 2014. The trend is starting to pick up in the UK as more ICT managers are choosing tables over PCs.

4.1.2.2 Italy.

In Italy, the main school values that emerged were respect of others and social integration, particularly when it comes to foreign students and different religious backgrounds. Teachers also emphasize growing as a “global citizen,” saying that their schools’ tolerance and respect policies allow students to take their learning outside of the classroom and into the real world. Schools also have a variety of ways to promote these values, including workshops for parents, school-level interdisciplinary projects and basic lessons in class. Although most teachers report that these values are more encouraged than directly taught, a few reported programs such as eTwinning and various citizenship and environmental science courses that encourage global citizenship and respect for others. These lessons typically last from 30 to 60 minutes. Many schools also have specific policies in which students must replace any damaged property; one school even has a community service program for those who break school rules.

In terms of ratings, Italian teachers report that fairness and cooperation are the most crucial prosocial traits for academic achievement, followed by generosity and understanding emotion. Compassion for suffering was rated least important. The same pattern emerged for academic achievement, with fairness being rated highest, followed by cooperation, concern for others, and understanding others’ emotions. The least important for social inclusion was following society’s expectations. Teachers believed that at least some students would benefit from direct instruction in these prosocial behaviours, with percentages potentially affected ranging from 35% to 80%. Teachers
also report that morality and prosociality are mostly relegated to religious curriculums in terms of direct instruction.

Italian teachers strongly emphasize group and pair work as opportunities for play in learning, although movies, songs, and traditional games are also incorporated. Prosocial behaviours are implied through the cooperation required to participate in said games. All Italian teachers also reported using digital media in learning; it was a positive experience in all cases. These teachers also had access to technology for teaching, including smart boards, computers, and free downloaded software. Half the teachers also had access to either tablets or some other form of mobile device. Currently, some students may loan tablets from the school, but personal devices brought from home are not permitted. Teachers, however, use a variety of apps on tablets and smartphones to transport documents from home, and as direct teaching material (Edmodo, Issuu, Stepmap, etc.) in addition to using their regular laptops.

Teachers in Italy have a wide variety of resources available for integrating technology and learning about new teaching methods. They report using general internet enquiries, books, colleagues, journals, newsletters and online or offline courses to learn about digital media and their profession. They make use of the BBC website, eTwinning events and Youtube regularly. However, contrary to their British counterparts, schools do not seem to have specific policies in place regarding use of digital media and technology in the classroom. The only rule to which teachers referred was the prohibition of students’ smartphones in class.

4.1.2.3 Spain.

Like their Italian counterparts, Spain’s schools heavily emphasize respect for others in their school values, although they add in the concept of brotherhood and solidarity to this. Again, personal development is cited as a major benefit of these values, in addition to living together in greater harmony as a society. Almost all teachers reported some kind of school-wide initiatives for encouraging school values in children. Most of these took the form of regular assemblies, peer tutoring sessions, and group activities, although one school reported incorporating mindfulness training into their curriculum. Teachers are also careful to incorporate group work into their academic lessons in order to solidify the need to work together; oftentimes they will give children problems that are too complicated to solve individually. For the most part, these lessons will last between 30 and 60 minutes, and usually around one hour per week is devoted to prosocial behavioural training. Few teachers were able to detail specific school-wide policies regarding school values, but those that did mentioned emotional intelligence development sessions and mediation services.

For the prosocial behavioural ratings, Spanish teachers consistently rated understanding others’ emotions as being key to academic achievement, followed by fairness and cooperation. Least important of the factors was following society’s expectations. In terms of social integration, a similar pattern emerged, with understanding others’ emotions coming out on top, followed by cooperation and concern for others. Once more, society’s expectations were rated as the least important factor. The vast majority believe that all students would benefit from being directly instructed in these prosocial behaviours, and most teachers report that any lessons addressing these behaviours focus mostly on cooperation.

Spanish teachers use a wide variety of games in teaching, including online games, games that involve the Smartboard, memory games, traditional sports and other outdoor games. However, few of these games directly address prosocial behaviours; most of the prosocial learning takes place through
roleplaying. Teachers report having a largely positive experience with digital games and media in the classroom. They say that digital games are great motivators for kids, and one teacher went so far as to say that technology in the classroom is the future of teaching. For the most part, teachers use various websites in their teaching, although many cite self-made powerpoints and DVDs as well. They do not, however, often use mobile devices in class; tablets and smartphones are restricted for personal use, with only a few teachers mentioning apps used in classroom settings. Many Spanish schools also have plans in place to provide tablets for students and teachers in the coming year, but they lament poor internet speed on current systems. Like their UK and Italian counterparts, Spanish students may not bring smartphones to school; this is largely due to the fact that many students simply cannot afford to own them. However, with more funding, teachers hope that students will be able to use tablets both in and out of school for learning.

In Spain, teachers are often trained in technology by school-led programs. They also work together in groups to tackle issues and learn about new developments in technology. However, for the most part, they search independently for resources to use in class. Some schools use Moodle and other formalized educational resources as well. As for specific digital policies in schools, many teachers report certifications in ICT they are able to take, while others point to teacher workshops. There are, however, a few schools which do not seem to have any specific policies in place.

4.1.2.4 Turkey.

In Turkey, school values are general: respect others, respect the environment, be truthful, be kind, etc. Emphasis is placed on individuals working in a social world; each child is unique, and must learn in their formative years how to best work together with different people in harmony with nature. However, there are also some schools who are much more bent on academic success, expressing their desire to assure high-paying jobs for their students after graduation. This is, however, the exception; truthfulness and respect are the key components of schools' values. Students are rewarded with positive feedback as well as physical rewards for adhering to school values. These values are integrated into regular academic lessons, which last about 40 minutes, but it is estimated that about 1 to 2 hours a week is spent specifically on prosocial behaviour instruction. Turkey’s educational department also has myriad specific policies in place for overseeing, rewarding prosocial behaviour, and punishing antisocial behaviour (http://www.resmigazete.gov.tr/eskiler/2014/07/20140726-4.htm).

The two most important prosocial facets for academic achievement according to Turkish teachers are acting fairly and compassion in the face of suffering. The least important factor was being cooperative. A different pattern emerged for social integration, with generosity coming out as the top predictor, followed by compassion and concern about others' feelings. Understanding emotion in others was rated least important for social inclusion. Teachers reported that almost all children would benefit from lessons in these behaviours, and that direct instruction in these are relegated to the first through third grades, with the exception of religious curricula which also include moral instruction.

Turkish teachers report that play is frequently used in the classroom, particularly online interactive games and guessing games in groups. Only one teacher reported the inability to use games and play in their lesson plans. They are also enthusiastic about the development of new digital materials designed for children, as their experience using digital media in class has been positive. For a few teachers, their experience with technology does not extend beyond a projector. With parental help, some have also been able to use some additional software in class, over and above what is available.
for free online. Turkey also has a specific project in place called the “Faith Project” which aims to provide every student and teacher with a personal tablet with pre-installed educational tools and apps, so teachers are optimistic about including more digital media in the classroom in years to come. There is, however, some conflict regarding use of personal devices in class. While some teachers encourage it, others claim that it is against national regulations; however, these same teachers claim that they use their own smartphones in class, so these regulations seem tenuous at best.

Turkey also provides for the technological education of its teachers. Teachers are sent documents informing them of new digital media available for their use. They also use Facebook groups, Twitter, and eTwinning to keep up to date. There is also an official website for teachers and technology: http://www.eba.gov.tr. However, teachers are also keen to keep up to date with the latest advances in their profession on their own time via internet searches and journal articles.

4.1.2.5 FYROM

In FYROM schools, like their counterparts elsewhere on the continent, respect is emphasized as a school value. They are unique, however, in their mention of gender equality; tolerance is valued not just between ethnicities, but also between men and women. These values allow children to function better in the world outside of school, but also enable them to demonstrate cooperation and generosity to all classmates, regardless of gender or race. Schools organize eTwinning events, workshops for children, parents and teachers on gender equality, and different school-wide projects to encourage their values. Generally, these values are also integrated into regular academic lessons; in one school, this is actually a requirement. These lessons take approximately 40 minutes for the most part, and about 1 hour a week is dedicated to prosocial learning. There is little available in terms of specific policies, but schools give support to teachers including these values into their lesson plans.

FYROM teachers rate cooperation as the most important facet of prosociality leading to academic achievement. Acting fairly is a close second, with being trusting rated third. Following society’s expectations is rated as least important. In terms of social inclusion, fairness and generosity were rated as the most important prosocial facets, with cooperation following. Once more, society’s expectations were rated as least important. All teachers reported that at least half, if not all, students would benefit from direct instruction in these prosocial habits. With the exception of one teacher, all teachers report that direct instruction is already available in schools, through the form of cultural lessons in language classes, learning units about kindness, and programs dedicated to promoting harmony between students.

All FYROM teachers reported use of games and play in teaching, with one teacher going so far as to say that they use play exclusively as a means of instruction. Most of these games are cooperation-heavy, and some are school-wide. In terms of digital games, teachers are positive. Their complaints are largely centred around school deficits, such as poor internet connectivity. Most software used in class is open source, although TolKid and GCompri are mentioned specifically. With one exception, FYROM teachers use either tablets or smartphones for their work, with smartphones being dominant; although no specific apps are mentioned, apps in general are popular. Teachers are divided, however, when it comes to students using their own personal devices. Phones are forbidden in the classroom at present, but FYROM has a program similar to Turkey’s “Faith Project” called “Computer for each child”, so teachers expect devices to become more common in time.
Like in Turkey, teachers in FYROM have regular meetings to discuss and learn about new platforms and media. Teaching and technology seminars are also available both on and offline. These resources are complemented by regular internet searches and free software. Unlike their counterparts elsewhere in Europe, FYROM teachers seem to take part in a variety of online communities and forums including Edmodo, DELTA, CELTA, and Facebook groups. It is also required by law that at least 30% of all teaching should be done with information technology. That said, there are still policies in place to protect children online (see http://www.educa.jcyl.es/ciberacoso/es/plan-prevencion-ciberacoso-navegacion-segura/fomento-buen-uso-medios-informaticos/codigos-civicos-buen-uso-medios-informaticos-centros-educat/uso-internet).

4.1.2.6 Greece.

As has been the case in most other countries thus far, Grecian schools place a heavy emphasis on respect for others, equality, and tolerance. Many schools report creating a contract of some kind between students and the school outlining these values together in order to ensure understanding. Teachers claim that these values help schools and classrooms function smoothly as a unit. Students learn to better understand others while developing positive social skills. The vast majority of schools have some kind of disciplinary program with a rewards system component for encouraging school values. However, many also incorporate these values into lesson plans in the form of large-scale projects, particularly when it comes to teaching diversity and tolerance. Many schools mentioned specific programs like “CreatingReaders” and the Comenius project as context conducive schemes undertaken to instruct these values, and some schools were able to reference specific policies (see http://livingvalueszante.weebly.com/uploads/2/5/3/2/25322058/chouliara_via.pdf) that dictate how to teach said values. Lessons tend to be between 30 to 60 minutes, with one or two hours a week spent specifically on these prosocial behaviours.

For the purpose of academic achievement, Grecian teachers report that cooperation is the most highly-rated value, followed closely by fairness. In terms of social inclusion, fairness came out as the top predictor, with cooperation taking second place. Following the expectations of society, as has been the trend across the board, was rated as least important for both academic achievement and social inclusion. All teachers reported that a minimum of 30% of their students would benefit from direct instruction in these prosocial behaviours, with most teachers saying that the majority of their students would benefit. Not only this, but the teachers and administration themselves are deeply concerned with the development of these attributes in their students. One group of teachers cited the “Living values in education” and “RED Ball” programs as direct initiatives taken by their school to address this need, while others cited DeBono hats, religious education, the Flexible Zone, and CreatingReaders programs. Schools in Greece appear to be extremely proactive when it comes to the development of prosociality.

All teachers surveyed in Greece reported using play to varying degrees in the classroom. Drama and roleplaying appear to be particularly popular learning tools. Teachers also use games to introduce their students to difficult concepts, then use different games as ways for them to practice what they have learned. They are also quick to acknowledge the cooperation and kindness inherent in play. Digital media are also used to a lesser degree, and for the most part, teachers report that they have to be approved by the Ministry of Education. Their experience with technology in the classroom has been largely positive, with only one teacher saying that they feel personal interaction is more important than mediation via a computer. They reported using online software provided by the IEP (Institute of educational policy), Youtube, projectors, astronomy software, and interactive whiteboards. The teachers that had not yet used digital media in the class reported being open to the...
possibility were it to present itself. Teachers report using laptops and tablets for note-taking, and projectors for putting textbooks on the board for children to see. Several teachers mentioned initiatives in their schools to create “digital classrooms” in which all students have access to portable computers. However, law prohibits children from bringing their own devices into the classroom (official directive No. 100553/Γ2/04-09-2012 ΥΠΑΙΘΠΑ).

Teachers in Greece are communal in their approach to keeping updated with technology in the classroom; nearly all teachers reported learning about new initiatives via administration and fellow teachers. They are also active in seminars and online learning communities. A few teachers mentioned specific websites like Facebook, academia.edu, LinkedIn and Twitter as ways they stay on top of digital advances. Interestingly, most teachers were unable to provide written documentation in regards to computer usage in the classroom. However, teachers from one school in particular were careful to point out that there is an ICT directive from the Ministry of Education (Y.A. 132831/Γ1/18.11.2011). Future developments in Greece therefore would have to fall under these guidelines were they to be implemented in schools.

4.1.3 Discussion

In terms of school values, cultural differences are limited, but crucial. On the continent, respect for others and the environment are key features, whereas in the UK, communication is deemed most important. Turkey, FYROM, Italy, Spain, and Greece all put a heavy emphasis on intercultural relations as well, something that the UK does not seem to emphasize. However, the methods to encourage these values are similar across all surveyed groups: school assemblies are extremely popular. Physical reward systems are also used across most countries, but they seem to take a secondary role. Schools on the continent average around 40 minutes of prosocial instruction per week as well, compared to the UK’s paltry 20 minute average. That said, nearly all teachers integrate PLO’s into their academic instruction; math will require cooperation, for example, or reading comprehension exercises might require students to discern the emotions of a character.

Cooperation rated highly within the top three facets of prosociality related to academic achievement across all countries, with the exception of Turkey, where it was rated as least important. Fairness also factored in the top four for all countries’ teachers. With the exception of FYROM who preferred trust, empathy (or understanding emotion in others) also rated consistently in the top four facets contributing to academic achievement. Compassion in the face of suffering was rated either in the middle range or top for continental teachers, while in the UK it was rated as least important on all accounts, suggesting an importance in the UK placed on social norms that is not present on the mainland, where obedience to social norms was consistently rated as either the least important on all accounts or among the bottom three. In the culture of private schools and hierarchical social structure, getting ahead in the world of academia may require a higher degree of social obedience than on the mainland, where creativity may be more emphasized.

In terms of social inclusion, Turkey was the exception. All other countries also included cooperation in the top three predictors, with the UK, Italy, and Spain all including empathy in their top three as well. FYROM was similar, switching empathy for concern. Generosity, fairness, and compassion were all rated first respectively by at least one country. Compassion was rated least important by the UK and empathy was rated least important by Turkey, while obedience to societal expectations was rated least important by all other countries.

These trends seem to suggest that there are fundamental cultural differences between countries surveyed that will need to be addressed during game development. Cooperation is a key value,
shared across Europe. However, it is also the most commonly-addressed concern in basic play; nearly all teachers surveyed mentioned group work as an important part of teaching values. Empathy is also highly valued, with the exception of Turkey. This value is less addressed in current prosocial training programs existing in schools, and would therefore be an ideal game focus. Due to its seeming universality as a value, games focused on empathy would only require translating to become useful in a variety of countries. Game companies can thus safely focus on cooperation and empathy in all games at least to a certain degree. Where culture may come into play is in the case of the other prosocial facets. Fairness, for example, could be a major focus in games targeted at a FYROM audience, while generosity can be heavily incorporated in Turkish games.

Getting teachers to use games in the classroom should not be too difficult a task, as with the exception of one Turkish teacher, all teachers reported using games of some form regularly. On the mainland, teachers also seem enthusiastic about the development of new digital games. In the UK, things are a bit trickier, as it is the most heavily policed country of those surveyed in terms of digital media in the classroom. If games were to be approved and taught by the education department, however, teachers would more than likely use them. Most schools had access to computers, so PC games would be ideal. However, FYROM and Turkey have government projects to provide their students with tablets; mobile games may be worth exploring as well. Smartphone editions of games do not seem feasible at this stage, as most countries have at least one or two teachers reporting smartphones being banned in the classroom. Wii-like or Kinect functionality via Smartboards may also be a possibility, as many teachers reported having access to these devices.

When publicizing these games for teachers, there are a few crucial target areas. First and foremost are governmental education departments. In a growing number of countries such as UK, Germany the use of computers in the classroom is pertinent to statutory requirements regarding child safety, privacy and data protection. However, all countries had at least one teacher or more who reported keeping up to date on technology and digital media in the classroom via school and government-run seminars and courses. Another popular method is eTwinning, in which European teachers learn from one another. If the prosocial games were to be publicized via www.etwinning.net, they would likely rapidly spread in popularity and usage. Teaching magazines and journals are also popular with a number of teachers across Europe; having a team write up an article about ProsocialLearn to publish in one of these outlets would be an effective publicity tool. Finally, although no specific groups were mentioned, publicizing via Twitter and Facebook would also reach a number of teachers.
5 Conclusions

This report examined the core domains of prosociality, the traits related to prosociality and summarised the data obtained by teachers' report on their view on prosociality and the feasibility of the project.

There are 6 core domains of prosociality. They all have a direct or indirect role on academic achievement and social inclusion and can be implemented in digital games for the purpose of the ProsocialLearn project. The six core domains are: empathy, trust, fairness, compassion, generosity and cooperation. A seventh domain, although not directly a core domain of prosociality has been related to prosociality: emotional intelligence and the report develop game ideas to develop this further.

This reports defined 9 concepts that might influence prosociality in children. These are: temperament, personality, attachment style, age, gender, SES, culture, family and the characteristics of the beneficiary. Because measuring all traits is not part of the project, we suggest selecting a few to 1. Calibrate sensors (comparing stated vs. observed behaviour) and 2. Use within games, one question at a time.

Finally, the data from the teachers seems to indicate that cooperation, fairness and empathy are deemed as very important for academic achievement in almost all European countries. In terms of social inclusion, generosity, fairness and compassion were rated as most important in most European countries. Lastly, some support seems to be already in place in most European countries so we expect that the ProsocialLearn project will be highly welcomed.
6 References


Svetlana H., Emotional Intelligence and Academic Achievement In Higher Education, Pepperdine University, (2007)


Volker, B. (2002). The politics of social networks: Interpersonal trust and institutional change in post-communist East Germany


Appendix 1 – Questionnaires used to gather data from children

The Temperament in Middle Childhood Questionnaire: TMCQ

Temperament in Middle Childhood Questionnaire (Version 3.0)

Today's Date __________________________ Sex of Child M F (circle one)
Child's Height __________ Foot(s) __________ Child's Date of Birth __________ Month __________ Day __________ Year __________
Staff Use: Subj. No. ____________________ Age of Child __________ Years / __________ Months

Race/Ethnicity of Child: European American/White ____ Hispanic ____
African-American ____ Asian/Pacific Islander ____ Native American/Indian ____
Multiracial ____ Other (please specify) __________________________

Your Relationship to Child:
Mother ____ Father ____
Other: (please indicate relationship) __________________________

Instructions: Please read carefully before starting:
On the next pages you will see a set of statements that describe children’s reactions to a number of situations. We would like you to tell us what your child’s reaction is likely to be in those situations. There are of course no “correct” ways of reacting; children differ widely in their reactions, and it is these differences we are trying to learn about. Please read each statement and decide whether it is a “true” or “untrue” description of your child’s reaction within the past six months. Use the following scale to indicate how well a statement describes your child:

Circle # If the statement is:
1 Almost always untrue of your child
2 Usually untrue of your child
3 Sometimes true, sometimes untrue of your child
4 Usually true of your child
5 Almost always true of your child

If you cannot answer one of the items because you have never seen the child in that situation, for example, if the statement is about the child playing wildly and recklessly and you have never seen your child play that way, then circle NA (not applicable).

Please be sure to respond by circling a number or NA for every item. If you find an item objectionable or upsetting, you may make an exception to this instruction and skip the item.
### My Child...

<table>
<thead>
<tr>
<th></th>
<th>Almost always untrue</th>
<th>Usually untrue</th>
<th>Sometimes true, sometimes untrue</th>
<th>Usually true</th>
<th>Almost always true</th>
<th>Does Not Apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likes poems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Likes to be physically active.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Likes going down high slides or other adventurous activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Greatly enjoys playing games where s/he can win.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is bothered by pain when s/he falls down.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Can stop him/herself when s/he is told to stop.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is easily distracted when listening to a story.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Has a hard time settling down after an exciting activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Likes rough and rowdy games.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Likes the crunching sound of leaves in the fall.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is afraid of fire.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Likes to think of new ideas.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is afraid of heights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Can't help touching things without getting permission.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is always on the move.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Tends to say the first thing that comes to mind, without stopping to think about it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Looks around the room when doing homework.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Would like to be friends with lots of people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Is very difficult to soothe when s/he has become upset.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Can make him/herself do homework, even when s/he wants to play.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Prefers playing outdoors to indoors when weather permits.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Interrupts others when they are talking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Would rather play a sport than watch TV.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Tends to become sad if plans don't work out.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Says the first thing that comes to mind.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Can say hello to a new child in class, even when feeling shy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>Sometimes appears to be downcast for no reason.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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</tr>
<tr>
<td>Has a hard time speaking when scared to answer a question.</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Cheers up quickly.</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Cries when given an injection.</td>
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<tr>
<td>Becomes sad when told to do something s/he does not want to do.</td>
<td>1</td>
<td>2</td>
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### My Child...

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<tr>
<th></th>
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<th>Sometimes true</th>
<th>Sometimes untrue</th>
<th>Usually true</th>
<th>Almost always true</th>
<th>Does Not Apply</th>
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<tbody>
<tr>
<td>32</td>
<td>Likes to play quiet games.</td>
<td>1</td>
<td>2</td>
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<tr>
<td>33</td>
<td>Would like to spend time with a good friend every day.</td>
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<td>2</td>
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<td>34</td>
<td>Likes the sound of poems.</td>
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<tr>
<td>35</td>
<td>Cries sadly when a favorite toy gets lost or broken.</td>
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<tr>
<td>36</td>
<td>Notices the color of people's eyes.</td>
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<td>2</td>
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<td>37</td>
<td>Likes to get out of the house and do something physical.</td>
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<td>38</td>
<td>Becomes quite uncomfortable when cold or wet.</td>
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<td>39</td>
<td>Can take a Band-Aid® off when needed, even when painful.</td>
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<td>40</td>
<td>Can stop him/herself from doing things too quickly.</td>
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<td>Enjoys exciting and suspenseful TV shows.</td>
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<td>42</td>
<td>Usually stops and thinks things over before deciding to do something.</td>
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<td>43</td>
<td>Likes to run.</td>
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<td>44</td>
<td>Notices the sound of birds.</td>
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<td>2</td>
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<td>Likes exploring new places.</td>
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<td>46</td>
<td>Can make him/herself run fast, even when tired.</td>
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<td>Becomes <em>self-conscious</em> when around people.</td>
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<td>Likes to make up stories.</td>
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<td>Becomes tearful when tired.</td>
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<td>Enjoys making his/his own decisions.</td>
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<td>Is warm and friendly.</td>
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<td>Would find moving to a new, big city exciting.</td>
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<td>Gets very angry when another child takes his/her toy away.</td>
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<td>54</td>
<td>Likes reading or listening to make believe stories.</td>
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<td>Is shy with new people.</td>
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<td>Has an easy time waiting to open a present.</td>
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<td>57</td>
<td>Notices odors like perfume, smoke, and cooking smells.</td>
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<td>Likes to make others feel good.</td>
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<td>Can generally think of something to say, even with strangers.</td>
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<td>Is followed by other children.</td>
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<td>61</td>
<td>Gets angry when called in from play before s/he is ready to quit.</td>
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<td>62</td>
<td>Can tell if another person is sad or angry by the look on their face.</td>
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<td>Is scared of injections by the doctor.</td>
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<td>When s/he cries, tends to cry for more than a couple of minutes at a time.</td>
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<td>Almost always untrue</td>
<td>Usually untrue</td>
<td>Sometimes true</td>
<td>Usually true</td>
<td>Almost always true</td>
<td>Does Not Apply</td>
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<td>65  Enjoying exciting places with big crowds.</td>
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<tr>
<td>66  Is energetic.</td>
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<td>67  Likes listening to music.</td>
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<tr>
<td>68  Remains upset for hours when someone hurts his/her feelings.</td>
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<td>69  Is bothered by loud or scratchy sounds.</td>
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<td>3</td>
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<tr>
<td>70  Has a hard time making his/herself clean own room.</td>
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<td>71  Enjoys drawing pictures.</td>
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<tr>
<td>72  Calls out answers before being called on by a teacher or group leader.</td>
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<td>73  Enjoys looking at books.</td>
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<td>74  Makes up mind suddenly.</td>
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<tr>
<td>75  Is afraid of burglars or the “boogie man.”</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>76  When a child is left out, can ask that child to play.</td>
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<td>3</td>
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<tr>
<td>77  Touches fabric or other soft material.</td>
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<tr>
<td>78  When working on an activity, has a hard time keeping his/her mind on it.</td>
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<tr>
<td>79  Has a hard time waiting his/her turn to talk when excited.</td>
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<td>2</td>
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<tr>
<td>80  Has a hard time paying attention.</td>
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<td>3</td>
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<tr>
<td>81  Is bothered by light or color that is too bright.</td>
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<td>3</td>
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<tr>
<td>82  Needs to be told by teacher to pay attention.</td>
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<tr>
<td>83  Often rushes into doing new things.</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>84  Is first to speak up in a group.</td>
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<td>85  Is afraid of sleeping over at someone’s house.</td>
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<td>86  Likes quiet reading time.</td>
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<td>87  Gets angry when she can’t find something she is looking for.</td>
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<tr>
<td>88  Is very careful and cautious when crossing the street.</td>
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<td>89  Has a hard time working on an assignment she finds boring.</td>
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<td>90  Is afraid of loud noises.</td>
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<td>91  Goes to school nurse’s office for very minor complaints.</td>
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<td>92  Likes the feel of warm water in a bath or shower.</td>
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<td>93  Does a fun activity when she is supposed to do homework instead.</td>
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<td>94  Gets angry when she has trouble with a task.</td>
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<td>95  Likes to look at trees.</td>
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<td>96  Likes to play so wildly and recklessly that she might get hurt.</td>
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<td>My Child ....</td>
<td>Almost always/true</td>
<td>Usually true</td>
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<td>Almost always/untrue</td>
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</table>
The Big Five Questionnaire in Childhood: BFQ-C

Items produced to measure the Big Five (self-report format).

Score on a likert scale from 1 (=Almost never) to 5 (=Almost always) if filled in by parents. The likert has to be from 1 to 3 if completed by children.

Energy/Extraversion:
(1) I like to meet with other people;
(9) I like to compete with others;
(14) I like to move and to do a great deal of activity;
(19) I like to be with others;
(23) I can easily say to others what I think;
(26) I say what I think;
(35) I do something not to get bored;
(40) I like to talk with others;
(42) I am able to convince someone of what I think;
(50) When I speak, the others listen to me and do what I say;
(55) I like to joke;
(57) I easily make friends;
(63) I am happy and lively.

Agreeableness:

(2) I share my things with other people;
(11) I behave correctly and honestly with others;
(13) I understand when others need my help;
(16) I like to give gifts;
(21) If someone commits an injustice to me, I forgive her/him;
(27) I treat my peers with affection;
(32) I behave with others with great kindness;
(38) I am polite when I talk with others;
(45) If a classmate has some difficulty I help her/him;
(47) I trust in others;
(51) I treat kindly also persons who I dislike;
(60) I think other people are good and honest;
(64) I let other people use my things.

Conscientiousness:

(3) I do my job without carelessness and inattention;
(7) I work hard and with pleasure;
(20) I engage myself in the things I do;
(22) During class-time I am concentrated on the things I do;
(25) When I finish my homework, I check it many times to see if I did it correctly;
(28) I respect the rules and the order;
(34) If I take an engagement I keep it;
(37) My room is in order;
(44) When I start to do something I have to finish it at all costs;
(48) I like to keep all my school things in a great order;
(53) I play only when I finished my homework;
(56) It is unlikely that I divert my attention;
(65) I do my own duty.

**Emotional Instability:**
(4) I get nervous for silly things;
(6) I am in a bad mood;
(8) I argue with others with excitement;
(15) I easily get angry;
(17) I quarrel with others;
(29) I easily get offended;
(31) I am sad;
(39) If I want to do something, I am not capable of waiting and I have to do it immediately;
(41) I am not patient;
(49) I easily loose my calm;
(54) I do things with agitation;
(58) I weep;
(61) I worry about silly things.

**Intellect/Openness:**
(5) I know many things;
(10) I have a great deal of fantasy;
(12) I easily learn what I study at school;
(18) When the teacher asks questions I am able to answer correctly;
(24) I like to read books;
(30) When the teacher explains something I understand immediately;
(33) I like scientific TV shows;
(36) I like to watch TV news, and to know what happens in the world;
(43) I am able to create new games and entertainments;
(46) I am able to solve mathematics problems;
(52) I like to know and to learn new things;
(59) I would like very much to travel and to know the habits of other countries;
(62) I understand immediately;

The Attachment questionnaire

ASCQ – Ricky Finzi-Dottan
Attachment Style Classification Questionnaire for Latency Age Children
(English translation of Hebrew version)

Here are 15 sentences. How true is each of the sentences for you? Everyone has his or her own answer. Try to answer only what you feel. This is not a test, and there are no right or wrong answers. Read each sentence carefully. Then choose one of the five answers in the box below. Every answer has a number. Circle the number of the answer that best describes you.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>All wrong</td>
<td>Wrong</td>
<td>A bit wrong/a bit right</td>
<td>Right</td>
<td>Very right</td>
<td></td>
</tr>
<tr>
<td>1. I make friends with other children easily</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. I don’t feel comfortable trying to make friends</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>3. It is easy for me to depend on others, if they’re good friends of mine</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Sometimes others get too friendly and too close to me</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>5. Sometimes I’m afraid that other kids won’t want to be with me</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. I’d like to be really close to some children and always be with them</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>7. It’s all right with me if good friends trust and depend on me</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>8. It’s hard for me to trust others completely</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>9. I sometimes feel that others don’t want to be good friends with me as much as I do with them</td>
<td>1 2 3 4 5</td>
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<tr>
<td>10. I usually believe that others who are close to me will not leave me</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>11. I’m sometimes afraid that no one really loves me</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>12. I find it uncomfortable and get annoyed when someone tries to get too close to me</td>
<td>1 2 3 4 5</td>
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<tr>
<td>13. It’s hard for me to really trust others, even if they’re good friends of mine</td>
<td>1 2 3 4 5</td>
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<tr>
<td>14. Children sometimes avoid me when I want to get close and be a good friend of theirs</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>15. Usually, when anyone tries to get too close to me it does not bother me</td>
<td>1 2 3 4 5</td>
<td></td>
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</table>
## The Emotional Intelligence Questionnaire

**Trait Emotional Intelligence Questionnaire Child Short Form**

S. Mavroveli & K.V. Petrides, Institute of Education, University of London

### INSTRUCTIONS:
- Please try to answer all questions.
- Please remember there are no right or wrong answers.
- Work as quickly as possible and do not think too much about the questions.
- Circle the answer that you believe describes you best.

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<tbody>
<tr>
<td></td>
<td>Disagree</td>
<td>Disagree</td>
<td>Neither agree</td>
<td>Agree</td>
<td>Agree</td>
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<tr>
<td></td>
<td>completely</td>
<td>nor disagree</td>
<td>completely</td>
<td></td>
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<tbody>
<tr>
<td>1.</td>
<td>I always try to be in a good mood.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>2.</td>
<td>I like meeting new people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>3.</td>
<td>I find it hard to get used to a new school year.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>4.</td>
<td>I feel great about myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>5.</td>
<td>When I feel sad, I try to do something to change my mood.</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>6.</td>
<td>I often feel sad.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>7.</td>
<td>If I’m happy with someone, I will tell them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>I get along with everyone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>I often feel angry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>10.</td>
<td>The kids at school like playing with me.</td>
<td>1</td>
<td>2</td>
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<tr>
<td>11.</td>
<td>When I’m in a new place, I get used to it quickly.</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>12.</td>
<td>Often, I’m not happy with myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>Many times, I don’t think before I do something.</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>14.</td>
<td>I’m very good at understanding how other people feel.</td>
<td>1</td>
<td>2</td>
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<td>15.</td>
<td>I don’t like trying hard for something.</td>
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<td>16.</td>
<td>It’s easy for me to understand how I feel.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>17.</td>
<td>If I have to do something, I know I can do it very well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>18.</td>
<td>I get angry very easily.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>19.</td>
<td>I try to do my homework as well as I really can.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>20.</td>
<td>It’s easy for me to talk about my feelings.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>21.</td>
<td>I don’t like waiting to get what I want.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>22.</td>
<td>I’m a very happy kid.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>23.</td>
<td>I don’t like studying hard.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>24.</td>
<td>I think I may be sad when I grow up.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>25.</td>
<td>Most people like me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>26.</td>
<td>I think very carefully before I do something.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>I’m not good at controlling the way I feel.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>I get used to new people very quickly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29.</td>
<td>I can’t find the right words to tell others how I feel.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>30.</td>
<td>I don’t like trying out new things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>31.</td>
<td>I like being with other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>I know how to show to others how much I care about them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33.</td>
<td>I’m often confused about the way I feel.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>34.</td>
<td>I find it difficult to understand what others are feeling.</td>
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<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35.</td>
<td>If I don’t do something well, I don’t like trying again.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36.</td>
<td>Usually, I think very carefully before I talk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</tbody>
</table>

1. Did you answer all the questions?
Appendix 2 – Questionnaires used to gather data from teachers

Questionnaire Objective

Thank you for agreeing to partake in this survey. Our primary aim is to understand how we can develop games that will help your students achieve better academic success and integrate better socially with their peers. Your responses will help us prioritize which skills to focus on in our game design.

The purpose is to understand what established social values exist within schools and how they form part of school life. We will integrate this information with a scientific model of “helping and cooperating”. This will help us improve communication with schools, to prioritise project requirements according to school values and to ensure relevance of technological solutions in relation to current teaching activities.

A. School Values

Do you have a common set of school values that guide culture and student behaviour (e.g. respect for others, truthfulness, being kind to others, etc)? If so please provide them:

What benefits to students do you see from a culture based on school values?

What initiatives are taken to encourage and promote school values?

Do you teach school values as skills to be acquired through learning objectives? If so

- Can you provide an example lesson plan?
- What proportion of teaching time is allocated to such lessons? (<1 hr a week, 1-2 hrs a week, >2 hrs a week)
- How long is a typical lesson (<30mins, 30-60mins >60mins)

Do you have specific policies for behaviour management that link to school values? if so please provide the policy

B. Helping and cooperating

In this section, we would like to learn your opinion about how much specific skills related to being kind and cooperative can help your students (a) do better academically and (b) integrate socially with their peers.

Please rank from 1 to 8 the following skills/traits in how much you think they help students achieve academically. Skills/traits on top (1) should be most important, while skills/traits on the bottom (8) should be least important.

- Understanding the emotions of others
- Being trusting of people
- Acting fairly
- Feeling compassion when witnessing suffering
- Being giving and generous
- Following expectations of society
- Being cooperative with others
- Having concern about how others feel
Please rank from 1 to 8 the following skills/traits in how much you think they help students *integrate socially with their peers*. Skills/traits on top (1) should be most important, while skills/traits on the bottom (8) should be least important.

- Understanding the emotions of others
- Being trusting of people
- Acting fairly
- Feeling compassion when witnessing suffering
- Being giving and generous
- Following expectations of society
- Being cooperative with others
- Having concern about how others feel

B1. What percentage of your students do you think would benefit from learning activities that foster traits and behaviors related to being kind and cooperative?

Has the level of kindness cooperativeness among your students been a concern for you so far?

B2. Are there learning activities or learning units about kindness and cooperation in your curriculum and in your practice? If yes, please describe briefly

C. Games in Learning

C1. Do you use games or playful activities for teaching and learning? If yes, please describe briefly

C2. Have you ever used games that are related to the concepts of kindness and cooperation? If yes, please describe briefly

C3. Have you ever used digital games for learning? If yes, how was your experience, positive or negative? If no, what potential possibilities and problems do you foresee in using them?

D. Devices and software

D1. Do you use software in your class? If yes, how do you access this software?

D2. Do you use portable devices such as tablets or smartphones in the learning process? If yes, please describe briefly. If no, do you anticipate using them in the coming years?

D3. Do you think it is feasible for students/pupils to bring their own devices (tablets or smartphones) for classroom use? Please explain your position (school’s position or national regulations)

D4. Do you personally use a tablet and/or a smartphone? Do you use apps? Are there apps that you find useful for your work?

E. Communities, Platforms and Sources of Information

E1. How do you learn about new teaching approaches or new programmes available for your school?

E2. How do you learn about available software or apps related to your teaching?

E3. Are there online sources of information and educational material that you find particularly useful for your work? Do you participate in online teaching communities? Please describe briefly
E4. Do you have policies for ICT Computing and Acceptable Use? If so please provide links