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Gamification of Prosocial Learning
for Increased Youth Inclusion and Academic Achievement

D2.6 Prosocial Game design methodology
A prosocial game design methodology, targeting game developers with guidelines and a practical toolkit on how to design and develop prosocial games to achieve desired learning outcomes. The scientifically grounded game design methodology is augmented with the pedagogical considerations required to ensure learning of skills take place. The practical toolkit is presented as a prosocial game design canvas, similar to business design canvas, and further enhanced by a set of flash cards covering prosocial skills, patterns for game mechanics, patterns for preparations, patterns for debriefing and reflection and patterns for generalisation.

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# List of Abbreviations

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<th>Description</th>
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<tbody>
<tr>
<td>DPA</td>
<td>Data Protection Authority</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<tr>
<td>PSL</td>
<td>Prosocial Learn Platform</td>
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<tr>
<td>CASEL</td>
<td>Collaborative for Academic, Social, and Emotional Learning</td>
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<tr>
<td>PSHE</td>
<td>Personal, social and health education</td>
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<tr>
<td>NPC</td>
<td>Non-player Character</td>
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Executive summary

This document provides a prosocial game design methodology, targeting game developers with guidelines and a practical toolkit on how to design and develop prosocial games to achieve desired learning outcomes. The scientifically grounded game design methodology is augmented with the pedagogical considerations required to ensure learning of skills take place. The practical toolkit is presented as a prosocial game design canvas, similar to business design canvas, and further enhanced by a set of flash cards covering prosocial skills, patterns for game mechanics, patterns for preparations, patterns for debriefing and reflection and patterns for generalisation.
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1 Introduction

1.1 Purpose of the document

This deliverable (intended to be reproduced as a booklet) is aimed at anyone who is interested in designing games with a positive social impact but doesn’t necessarily know what the best approach may be. More specifically, it is for game developers intending to use the prosocial-learn platform. It also contains general overview of social emotional skill and concepts of prosociality in games and hence experienced professionals may also find it a useful reference.

Since this booklet is designed to appeal and talk directly to game developers on a practical basis, some of the more formal, academic language of typical deliverables has been softened to make the content more accessible.

The explicit prerequisite for utilising this booklet is knowledge of digital games in general and prior experience in developing these. It would not be possible to include every aspect of game design within a booklet on prosocial game design, hence it’s expected that readers are familiar with processes used in game design and development.

Given that prosociality is situated within psychological and social sciences, a general understanding of human behaviour and in particular social interaction is highly desirable, however given the primary audience of this book are game developers, the core concepts are described with further reading suggestions.

Finally, this booklet is not meant as an esoteric theoretical view of prosocial games, it is meant as practical advice and direction for designing and developing games for social good.

1.2 Scope and Audience of the document

The dissemination level of this document is public. The scope is not only the members of consortium, reviewers and European Commission staff but also third parties especially game developers.

1.3 Structure of the document

The document contains the following sections:

Section 1: Introduction – an introductory section, i.e. this present section, which describes the main purpose of the document

Section 2: Prosociality – this section offers an overview of what is the prosociality, which are the domains and which and what are the prosocial skills.

Section 3: Focuses upon the way of teaching and learning prosociality paying special attention to enhancers such as instruction enhancers, modelling enhancers, role play enhancers or feedback enhancers.
Section 4: Presents an analysis of what are the prosocial games and the reasoning to use them for learning social skills.

Section 5: This chapter provides the methodology to design prosocial games following the next steps: strategy, research, ideation, canvassing, prototyping, development and evaluation.

Finally the document includes a conclusion section.
2 Prosociality

2.1 What is prosociality and why it matters?

Prosocial behaviours are a set of positive and voluntary behaviours intended for the benefit of others. In contrast with anti-social behaviour, prosocial behaviour is generally characterised by empathy, moral values and a sense of personal responsibility to help others rather than a desire for personal gain or being the cause of distress for others. Prosocial acts include:

- helping,
- sharing,
- donating,
- cooperating with others, as well as
- conforming to socially acceptable behaviour.

Prosociality in action could be observed in behaviours such as: helping a friend study for an exam, consoling a friend who is crying, sharing a chocolate bar with someone, defending a friend when they are unfairly accused of something or including a newcomer in to a group activity.

Prosocial actions may be motivated by empathy and concern for the welfare and rights of others, as well as for personal or practical concerns, such as one’s social status or reputation, hope for direct or indirect reciprocity, or adherence to one’s personal values of fairness. Prosociality may be motivated by altruism and selflessness, the desire to do good, and to have concern for the welfare of others.

Prosocial skill difficulties in children are among the most highly referred concerns of parents and teachers. Considerable evidence suggests prosociality to be central to the well-being of social groups across a range of scales. Children who help others have more positive relationships and better interactions with their peers, leading to better social inclusion. Research has also shown that better prosocial skills leads to better academic achievement.

2.2 What are prosocial domains?

Research in psychology has shown that prosociality can be understood in terms of a number of domains, or overarching concepts. The following six domains have been particularly well-studied: empathy, compassion, trust, fairness, generosity and cooperation.

- **Empathy** corresponds to the ability to understand own and other’s feelings and to feel someone else’s feelings (e.g recognising that you are feeling sad today or feeling sadness for a friend whose dog just died).
- **Empathy** is a first step towards **compassion**, which is the ability to take actions to help someone who is in need, as well as being kind to oneself (e.g consoling a friend who is sad or not judging yourself too hard after failing an exam).
- **Trust** corresponds to the ability to trust someone (trusting a friend will not tell your secret) and to be trusted (your friend is trusting you not to tell his/her secret to anyone).
• **Fairness** is the ability to understand that a situation is unfair (you had more sweets than your friend whereas you had both deserved an equal amount) and taking actions to make it right (giving some of your sweets to your friend).

• **Generosity** is the ability to give some of your own resources to someone else (e.g. your friend didn’t work hard to get the sweets but you want to give him some out of generosity).

• Finally, **cooperation** is the ability to work in a group towards a common goal.

Although the domains are useful in explaining the different types of prosocial concepts that children need in order to be successful learners and be socially included, the high level nature of concepts makes it somewhat difficult to make games with guaranteed learning outcomes.

### 2.3 What are prosocial competencies and prosocial skills?

The most practical way of defining prosociality is through the description of skills or competencies. These are based on the CASEL approach, which is well-used by teachers, and stands for **Collaborative for Academic, Social, and Emotional Learning**.

The CASEL framework offers five social and emotional learning competencies:

1. self-awareness,
2. self-management,
3. social awareness,
4. relationship skills, and
5. responsible decision making.

• **Self-awareness** represents the ability to accurately recognise one’s emotions and thoughts and their influence on behaviour. This includes accurately assessing one’s strengths and limitations and possessing a well-grounded sense of confidence and optimism.

• **Self-management** corresponds to the ability to regulate one’s emotions, thoughts, and behaviours effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working towards achieving personal and academic goals.

• **Social awareness** represents the ability to take different perspectives of, and empathise with, others from diverse backgrounds and cultures, to understand social and ethical norms for behaviour and to recognise family, school and community resources and support.

• **Relationship skills** can be defined as the ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.

• Finally, **responsible decision making** represents the ability to make constructive and respectful choices about personal behaviour and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others.
2.4 What are prosocial skills?

The previous section presented prosocial skills or competencies.

We have created the non-exhaustive list of the 42 prosocial skills that fit into 3 families of skills, namely **skills for friendship**, **skills for feelings**, and **skills for collaboration**. These are listed below to provide examples of the range of skills that can be considered prosocial.

<table>
<thead>
<tr>
<th>SKILLS FOR FRIENDSHIP</th>
<th>Description</th>
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<tbody>
<tr>
<td>Communicating with others</td>
<td>Starting and keeping a conversation with others</td>
</tr>
<tr>
<td>Using Nice Talk</td>
<td>Approaching and talking to others in a friendly way</td>
</tr>
<tr>
<td>Introducing Self to Others</td>
<td>Telling your name, pausing, listening and asking others their name</td>
</tr>
<tr>
<td>Introducing Others</td>
<td>&quot;Tom, this is Lucy; Lucy, this is Tom; both of you like chocolate&quot;</td>
</tr>
<tr>
<td>Joining in a Conversation</td>
<td>Observing the conversation, deciding when to join, saying something relevant to the conversation.</td>
</tr>
<tr>
<td>Joining a Play Group</td>
<td>Observing the activity, deciding when to join and asking to join the group</td>
</tr>
<tr>
<td>Sharing About Oneself</td>
<td>What, with whom, how and when to share about oneself</td>
</tr>
<tr>
<td>Sharing Your Things With Others</td>
<td>When, with whom, why and how to share your things with others</td>
</tr>
<tr>
<td>Learning About Others</td>
<td>What, with whom, how and when to ask questions to learn about others</td>
</tr>
<tr>
<td>Being an Active Listener</td>
<td>Stopping other things, making eye contact, nodding or asking to clarify if not clear</td>
</tr>
<tr>
<td>Giving Compliments</td>
<td>How and when to give compliments</td>
</tr>
<tr>
<td>Receiving Compliments</td>
<td>Saying thank you and accepting a compliments</td>
</tr>
<tr>
<td>Respecting Others</td>
<td>Being attentive, empathetic, sympathetic, kind and supportive towards others</td>
</tr>
<tr>
<td>Respect for Others' Personal Space</td>
<td>Keeping at arm's length</td>
</tr>
<tr>
<td>Not Interrupting Others</td>
<td>When and how to ask questions</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>SKILLS FOR FEELINGS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Control</td>
<td>Developing strategies to regulate emotions and using them (e.g. &quot;take 3 deep breaths&quot;)</td>
</tr>
<tr>
<td>Identifying Feelings and Emotions</td>
<td>Observing changes in own or other's facial or body expression.</td>
</tr>
<tr>
<td><strong>Expressing Feelings and Emotions</strong></td>
<td>When, how and with whom to express feelings</td>
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<tr>
<td><strong>Understanding Social Cues</strong></td>
<td>Observing and monitoring interactions with others</td>
</tr>
<tr>
<td><strong>Showing Concern for Others’ Feelings</strong></td>
<td>When and how to show concerns for others’ feelings</td>
</tr>
<tr>
<td><strong>Dealing With Stress</strong></td>
<td>Identifying stress, finding strategies and taking actions to decrease stress</td>
</tr>
<tr>
<td><strong>Dealing With Anxiety</strong></td>
<td>Identifying anxiety, finding strategies and taking actions to decrease anxiety</td>
</tr>
<tr>
<td><strong>Dealing with your angry feelings</strong></td>
<td>Identifying angry feelings, finding how and when to express or regulate anger</td>
</tr>
<tr>
<td><strong>Dealing With Another Person’s Angry Feelings</strong></td>
<td>Identify whether a person is angry, and finding how and when to deal with it</td>
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<tr>
<td><strong>Dealing With Rejection</strong></td>
<td>Identifying why and whether you are being rejected and what to do when it happens</td>
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<tr>
<td><strong>Dealing With Being Left Out</strong></td>
<td>Identifying why and whether you are being left out and what to do when it happens</td>
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<tr>
<td><strong>Dealing With Boredom</strong></td>
<td>Identifying boredom and learning how to entertain yourself</td>
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**SKILLS FOR COLLABORATION**

<table>
<thead>
<tr>
<th><strong>Description</strong></th>
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<tbody>
<tr>
<td><strong>Setting Goals and Obtaining them</strong></td>
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<tr>
<td><strong>Solving everyday problems</strong></td>
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<tr>
<td><strong>Solving a Problem as a Group</strong></td>
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<tr>
<td><strong>Following directions</strong></td>
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<tr>
<td><strong>Paying Attention</strong></td>
</tr>
<tr>
<td><strong>Staying on Task</strong></td>
</tr>
<tr>
<td><strong>Working Independently</strong></td>
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<tr>
<td><strong>Cooperation</strong></td>
</tr>
<tr>
<td><strong>Taking Turns</strong></td>
</tr>
<tr>
<td><strong>Being a good sport</strong></td>
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<tr>
<td><strong>Being Patient</strong></td>
</tr>
<tr>
<td>Skill</td>
</tr>
<tr>
<td>------------------------------</td>
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<tr>
<td>Taking and building endurance</td>
</tr>
<tr>
<td>Being assertive</td>
</tr>
<tr>
<td>Saying No</td>
</tr>
<tr>
<td>Accepting No</td>
</tr>
<tr>
<td>Asking for Help</td>
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<tr>
<td>Helping Others</td>
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Table 1 – Non-exhaustive list of prosocial skills
Teaching and learning prosociality

Evidence-based research has indicated that the key to successfully delivering prosocial learning is well-designed classroom-based programs that target the range of prosocial competencies, provide opportunity to practice, and offer multi-year programming.

Research has also shown that effective programs provide repeated opportunities to practice new skills and behaviour within the program structure and beyond to real-life situations (CASEL 2013).

To better promote student outcomes, implementers are urged to follow “SAFE” procedures.

- Use a Sequenced step-by-step training approach
- Emphasize Active forms of learning that require students to practice new skills
- Focus specific time and attention on skill development, and follow up periodically
- Be Explicit in defining the prosocial skills the students are attempting to learn

Providing opportunities to practice within classroom lessons is important, but actual opportunities to practice in real-life situations are likely to have even more impact. For this reason it is important to consider how the potential players of your games will then transfer these skills into the real world. Careful consideration must be made for the discussion and reflection period, potentially during, but always following playing the game.

Skillstreaming

Over the last 40 years skillstreaming has emerged as an evidence-based strategy for systematically teaching prosocial skills. For elementary-age students, skillstreaming focused on skills to successfully navigate their school environment, follow the expectations of the teacher, deal with peer and adult conflict, and deal with the many feelings typical of students of this age (7-10 years more specifically).

The skillstreaming process for teaching prosocial skills focuses on sequence of learning strategies of:

1. instruction/description,
2. modelling,
3. role-playing,
4. performance feedback, and
5. generalisation (trying the skill in different context).

Both skill-deficit, where the child lacks the know-how about a behavioural skill, and performance-deficit, where the child is aware of the correct behaviour but fails to reproduce it in the correct circumstance, are addressed through this sequence. For example, the child may have the know-how to carry out a skill but because of lack of positive reinforcement, or lack of confidence, the child does not perform the skill in the appropriate setting. Some children with increased social anxiety may have certain social information processing difficulties, experiencing errors in how they think about and respond to social cues.
3.1 Prosocial model for Teaching and Learning Social and emotional skills.

The sequence of learning strategies introduced above is presented here in more detail.

**Instruct:** Verbal and written description of skill and steps to perform the behaviour, including highlighting benefits and short term and long term outcomes of behaviour. Both teachers and students take part in describing and discussing the skill and the steps to reproduce it.

**Model:** The behaviour or skill is demonstrated step-by-step (i.e. Modelled). More than one model set should be used, ideally both physically and digitally i.e. two adults, two characters in the game, one child and one adult, one child and a virtual character, and finally two children. Children also encouraged to internally rehearse the behaviour or skill steps (in their mind's eye).

**Role-play:** The children imitate or role-play the modelled behaviour and skill steps. The behaviour must be over rehearsed, through the children practicing the skill over and over again. The behaviour or skill must be demonstrated and practised in different contexts such as peer group, home, school, community.

**Feedback:** During play provide in-game performance rewards linked to real world activities or material or social reinforcement e.g. stars or scores to show success or progress. Provide in-game corrective feedback, from system and other players. Provide opportunities (like pauses) for teachers to provide verbal and non-verbal feedback.

**Generalize:** Generalization is the most important step! It helps players identify where and when to use the skill and how to apply it in variety of circumstances. Methods include: reflection, perspective-taking, homework based on carrying out the skills between peer groups, at home, at school and within the community.

**Steps in more details**

Each step is described below in further detail. In section 3.2 each step is expanded even further to incorporate a variety of methods to enhance and increase the effectiveness of teaching and learning prosocial skills.
Step 1: Formal Instruction: Verbal and written description or review of skills or steps to perform the activity. The behavioural steps for each skill are presented in simple, written language. Ideally the skills are introduced through an adult, or more skilled peer, concretely and enthusiastically reviewing each behavioural step of the skill. An adult or child reads each behavioural step out loud, followed by explanation or discussion.

Step 2: Modelling of skills: Modelling is learning by imitation. Through the child’s active observation and later by imitation, the skills are further explained and reinforced. For example, modelling of skills can be conducted by group members or using puppets, dolls or avatars or entities within a game. Modelling may occur in the following order:

- 1st: the skill sequence is role-played (modelled) by two adults, or in-game characters.
- 2nd: the skill is role-played or modelled by an adult and child, or in game avatar and a child.
- 3rd: the skill is modelled by two children, with adult coaching and encouragement, or by two players in the game with directive support through the system.

Step 3: Role Play: The actual application of a skill set in a variety of settings. This could be first person role play, third person role play or more akin to strategy games where the player makes decisions for a number of NPCs from a high level.

In general the skill must be role played though at least four common social contexts, i.e. the student is required to act-out or describe and discuss the skill in the context of: (a) peer group, between friends, (b) at home with parents or with siblings, (c) at school level, (d) at community level.

Step 4: Feedback: Feedback contains two components; feedback during role-play and feedback immediately afterwards. Feedback in-game will include receiving points from the system or from peers or the teacher, e.g. corrective feedback on actions which may include further direction. Section 3.2.4 defines the different types of feedback in more detail.

Feedback during modelling and role-play, children should be encouraged to politely evaluate whether the role player (adult, child or avatars) demonstrate each skill step correctly.

Feedback immediately afterwards: Also referred to as debriefing and reflection, the role of feedback immediately afterwards to give the learner the time and direction needed to cement what they’ve learnt and how well they’ve done. The aim is to support the player beyond the active role-play, by providing the children with the time and space needed for further discuss whilst the activity is fresh in their minds, supporting them to reflect on the skills.

Step 5: Generalisation: Helping the player identify where and when to use the skill and how to apply it to a variety of circumstances.

In order to generalise the skills learnt in the classroom the caregiver at home has a role in sustaining and generalising the skills in a different environment. It is an essential part of the learning process that should not be overlooked. In fact, it is the most important step. Behaviour learnt in a school context and not enacted in a real-life situation are unlikely to be learnt and used when necessary. It
is irrelevant to only be able to perform a behaviour in hypothetical settings and the children should be given opportunities to perform the new learnt skills at home, in the playground or any environment.

Techniques for generalisation include setting homework with specific skills to practice, writing about scenarios that might involve those skills, and discussing with friends and family about when and how to use the skills.

**Common Mistakes**

The most common mistake in working with skills is teaching new skills that are not useful. Insofar as the skills or behaviours that are taught through the actions and goals of the game:

- Do not really improve the child’s life, or the child cannot perceive its purpose or outcomes.
- Is not maintainable, it’s niche, comes up very rarely even in the setting it was taught.
- The skill may not generalize to other settings or people, or generalisation has not been completed.
- Most importantly, there is no on-going source of reinforcement for the behaviour in everyday life.

3.2 Enhancing the effectiveness of the learning

In this section we describe a wide range of strategies that game developers could utilise in order to improve the learning outcome for students. As a prosocial game developer, it’s important to see the game as part of the learning experience and the learning activity, and as such build in as much as possible, the potential to enhance the learning.

3.2.1 Instruction enhancers

A variety of techniques have proved to be useful in maximising learning specifically with relation to the instructions. One example is through including the peer group of the student and allowing peers to reward the target student for skill used. If possible the peer group should be a consistent class, all of whom are engaged in the process, so as to provide natural reinforcement by peers for the student’s performance of desirable behaviour.

The following principles must be employed as liberally as possible during the instruction phase, these are:

- **Provide all the principles of the activity.** This includes all the rules, strategies and organising principles that would lead to successful performance within the game. Make sure the player is aware what skills they need to demonstrate in order to succeed.
- **Over-instruct the steps for the skills.** Maximise overlearning by providing the instructions, the steps for the skills, the positive outcomes using more than one mode. Ideally a variety of instructors should be used.
• **Use multiple media**, such as text, read internally, spoken (by teacher or peer who is capable of the skill), use of images and animation or video.

• A skill is not really generalized if a child can only respond to one particular instruction, when it is stated in exactly the same way.

• If a child understands the instructions and steps of what’s been taught, they should be able to explain it in more than one way.

### 3.2.2 Modelling enhancers

Learning by modelling follows three stages: **attention, retention and reproduction**.

**Phase 1: Attention**: Players can not learn from watching a model unless they are directed to pay attention to the specific behaviour being modelled.

Games are particularly effective at attracting attention! Ensure the player’s attention is focused on the specific behaviour and skill being modelled, with little distraction by superfluous or irrelevant elements.

**Phase 2: Retention**: In order for the child to be able to reproduce what he or she has observed at a later time, he or she must be able remember and retain the steps required in the skill. Retention can be enhanced through a number of methods:

a) **Internal rehearsal** - rehearsing or performing the displayed behaviour in one’s own mind.

b) **Over rehearsal** - or overlearning, by practicing a specific behavioural step over and over again.

c) **Role-play** - the individual demonstrating specific behaviours not typical for him or her or to respond to certain situations with behaviours within their repertoire.

Provide opportunity for players to rehearse the behaviour or skills and associated steps in their own mind. Ask the player to make time to think through the steps of the skill before attempting it.

Provide opportunity for over rehearsal, practising the skill again and again. Just like any good game, keep the skill simple to do, difficult to master and provide plenty of opportunities to try or do the action again and again.

**Phase 3: Reproduction**: Learning in not the same as doing. So acquiring or gaining knowledge about how to do something is not the same thing as performing it, particularly as it relates to social skills that may have been gained in entirely different circumstances to where the user needs to use them.

The likelihood that a person will actually perform the skill or behaviour that they have learned is largely dependent on the reward that they expect for carrying out the action. A reward can be intrinsic (because the child likes or wants to do it), or it can be extrinsic (carried out to secure a higher score or because of how the child thinks others will think about him/her).

Provide opportunities for players to receive rewards or witness the benefits of adopting particular skills, ensuring that the rewards are beyond a token gesture and help the player understand the
positive effect and impact of their actions toward their own desired objectives. For example being better appreciated.

Although modelling is powerful, it is also true that children observe dozens or perhaps hundreds of behaviours every day that they do not imitate. Digital media exposes people to highly polished and professional modelling displays of particular behaviour, for example of someone buying a product, but the observers do not later buy the product. Equally many individuals observe high quality instructional videos, buy remain unable to carry out the skill.

Most effective modelling occurs when the model, i.e the person to be imitated, has more of these characteristics:

a) appears to be highly skilled or expert
b) is regarded as having high status
c) controls the rewards desired by the player and/or is rewarded for the given behaviour
d) is of the same sex, approximate age, and social status as player
e) is friendly and helpful

We are all more likely to imitate expert or powerful yet pleasant people who receive rewards for what they are doing, especially when the particular rewards involved are something that we desire too.

Ensure the modelling may be by other real players or other avatars or characters in the game that the player can perceive as high status and pleasant who are rewarded for their skills, whereas the player also desires these rewards.

Utilise the following suggestions to improve the quality and effectiveness of the modelling.

Effective modelling occurs when the models show the behaviour:

a) Clearly and in a detailed manner, covering the various steps and highlighting the benefits.
b) In the order from least to most difficult behaviours and skills.
c) With enough repetition to make overlearning likely - overlearning is the practising of newly acquired skills beyond the point of initial mastery that leads to automaticity.
d) By several different models or characters rather than a single model.

Effective learning can occur through modelling when the person observing is:

a) asked to imitate the model
b) shares a similar background or attitude toward the skill as the model
c) is friendly or likes the model
d) is rewarded for performing the modelled behaviour
e) has a profound understanding of why this behaviour or skill is useful, and how it benefits the individual
Effective coping model to help players who may be struggling must be presented. If a player perceives the skill as easy and that it can be performed without any feeling, they may be less likely to try the skill when caught up in the emotion of real-life event.

### 3.2.3 Role play enhancers

The behavioural outcomes can be improved by giving the role-player enough information about the content of the role-play to be able to enact it and enhancing the opportunity to role-play through the following methods:

a) A sense of autonomy, by providing choice on the part of the player or group member to choose to either take part in the role play or not.

b) A public commitment to the behaviour, for example by stating to fellow group members, or others in the game about the intention to carry out a specific skill.

c) Ability to improvise and create one’s own story as enacting the role-play behaviour.

d) Reward, approval and reinforcement for performing the behaviour.

### 3.2.4 Feedback enhancers

Feedback consists of both positive reinforcement and corrective feedback. Performance feedback is defined as providing the learners with information on how well they have done during role-playing. Feedback should be given both during and after play.

Performance feedback during role play must be directive and as much as possible positive rather than negative. The aim is to provide pleasant coaching and encouragement to the players, rather than stern criticism or negative responses. During modelling and role-play, children should be encouraged to politely evaluate whether the role player (adult, child or avatars) demonstrates each skill step correctly. Performance feedback through praise and gentle corrective feedback regarding rehearsed skill or behaviour is critical. The role of performance feedback is behavioural change based on the child’s new and prior knowledge of social behaviours, ability to convert knowledge into social behaviour, and ability to accurately evaluate his or her skill performance. Peer feedback, particularly positive peer feedback and peer acceptance has positive effects on prosocial behaviours.

Debriefing and reflection (after role-play) give the learner the time and direction needed to cement what they’ve learnt and how well they’ve done. The aim is to support the player beyond the active role-play, by providing the children with the time and space needed for further discuss whilst the activity is fresh in their minds, supporting them to reflect on the skills. In particular the teacher and the system must provide debriefing feedback about the overall performance. Children must then be encouraged to discuss their experience and reflect on their choices and the outcomes. Further discussion should prompt the child to re-imagine and describe the skill being used under the four different contexts of peer-group, home, school and community must be incorporated.

Positive reinforcement and corrective feedback could be argued are a main staple of games! Do the right thing and you get points, do the wrong thing and you lose a life! In applying positive
reinforcement or positive rewards in games, the game designer is urged to incorporate a range of rewards including material, activity, token and well as social including both verbal and nonverbal praise, as well as social game mechanisms. Any verbal praise should be specific and relate to the action of the player has completed - for example “well done for not interrupting your game partner”, rather than a generic “good work”, which although positive, fails to adequately communicate what the child is doing correctly.

3.2.4.1 Reward or reinforcement

In general there are four types of basic reinforcement or rewards which teachers and other school-based staff have worked successfully with, these are: material, social, activity and token.

Material rewards / reinforcers: Also called tangible reinforcers or material reinforcers, these are actual goods or objects presented to the individual based on how well they display the appropriate behaviour and skill. Material reinforcers in the classroom may include: food (raisins, apples, cereal), stars/stickers, pictures to colour, letter of praise to the principal or parent, ribbons, pencils, paper, colorful folders, comic books, posters, photograph of the student, awards, small toy or badge.

In the context of games, material reinforcers could be specific abilities or specific objects - whereas a game may reward a player for their display of skill through providing a significant ability or rare and specific objects. As a game designer it’s important to think about the tangible value of the reward and provide opportunities and links to real world material rewards.

Activity rewards / reinforcers: Are events and activities a child would freely choose when an opportunity exists. Given freedom to choose, many young people would watch television or play on computers rather than completing their homework. Typical activity rewards include: reading comics, computer time, using the teacher’s equipment or materials, having one-to-one time with an adult, going to lunch early, tutoring a younger child, taking free time in the library, completing duties for the teacher for example running errands.

This may be interpreted in a context of games for social and emotional learning as bonus levels or freeform parts of the game where the mechanisms may focus more on entertainment rather than working toward a specific social and emotional skill.

Social rewards / reinforcers: Within the classroom often expressed in forms of attention, praise or approval. Peer feedback, i.e feedback from friends and classmates, has consistently been found to be instrumental in improving the behaviour and ability of students to learn prosocial skills.

Nonverbal reinforcers include: smiling, nearness to the student, thumbs-up, looking interested, giving a hug, applause, nodding, giving a pat on the back, giving a ‘high five’.

Verbal reinforcers include the use of such specific directed feedback including words such as: thank you, you really paid attention, that’s right, good thinking, I’m pleased that you chose to do that, bravo, I like the way you’re being a good sport, wow!, fantastic, terrific, good answer, that was a very kind (friendly, caring) thing to do, you did a great job and the like.
There are many social mechanisms that could be used in games, such as leaderboards, gifting and social points. It’s important to consider their impact in the context of social and emotional learning, and ensure their application is appropriate and does not cause unnecessary distraction or produce a negative impact.

**Token rewards / reinforcers:** Usually employed when more easily implemented social reinforcers prove insufficient, these are symbolic items such as points or stars that are given to students when they perform the appropriate or desired behaviour.

Tokens are usually exchanged for a wide range of material or activity rewards. A token economy system specific how tokens are gained and how they are exchanged for material or activities.

Using tokens can be seen as gamification! Token based rewards can be seen as points given to students when displaying the right behaviour which can then be exchanged for something more tangible like material or an activity.

Some **factors to consider when implementing a token/ points based system:**

1. Ensure the receiving of points is directly linked to the specific behaviour being promoted or encouraged.
2. Provide guidance for teacher to translate a specific amount of points to a specific activity or material reward. This can be done by explaining how the points system in the game works in a simple table, together with what the maximum points earned could be for completing a particular skill, so teachers can adjust the reward rate to earn points easily.
3. Points should be given as soon after the behaviour is demonstrated as possible, according to the reward schedule.
4. Points could be given by the system (the game), by the teacher or by peers. Decide how your game will make use of who will give points to the student.

The potency of rewards and reinforced in general can be increased when they are not only desirable, but also bring reinforcement from peers and others.

**3.2.4.2 Key factors in designing reward systems**

When designing games for social and emotional learning, consider the following factors in designing the reward system:

**Contingency:** The connection between the desirable behaviour and the reward must be explicit. For example use “Good job taking turns” rather than a generic “good behaviour”

**Immediacy:** The more immediate the reinforcer follows the desirable behaviour, the more likely it is to be effective. To further ensure the reward is not misunderstood to be relating to an unrelated event.
**Consistency:** The effects of positive reinforcement on behaviour are usually gradual rather than dramatic, working slowly to strengthen behaviour over time. Positive reinforcement must be presented consistently.

**Frequency:** When first trying to establish a new appropriate behaviour almost all instance of that behaviour ought to be rewarded. This high frequency of reinforcement is necessary to establish the behaviour, once it seems clear that the behaviour has actually be acquired, the reinforcement schedule can decrease presentation. Partial reinforcement contributes to the continuation of the appropriate behaviour. It may be on a fixed-time schedule on a fixed number of response schedule or on a variable time or number of response schedule.

**Amount:** Acquiring knowledge about how to perform a new behaviour is different from using these behaviours. The amount of reinforcement provided influences performance much more than it does learning. Children will learn new appropriate behaviours just about as fast for a small reward as for a large reward, but they are more likely to perform the behaviours on a continuing basis when large rewards are involved.

Be aware of satiation effect, in which the player loses interest in seeking the reinforcement because either; a) there is too much, b) too little, or c) no real associated value with reinforcer.

**Variety:** Another satiation effect would be due to excessive use of the same reinforcement over and over again. Students may perceive this to be mechanical and lose interest or decrease responsiveness to it. Introduce variety in rewards.

**Pairing with praise:** Social reinforcement is the most pertinent type of reward for enduring behaviour change. Presentations of material, activity or token rewards must be accompanied by expression of social reinforcement in the form of praise.

Praise that is given in concord with reinforcers can over time replace material, activity or token reinforcers. Whilst teacher praise is not always initially effective, by systematically increasing the incentive value of praise through association with rewards, the teacher can gradually reduce the frequency of material, activity or token reinforcer and replace it with verbal praise.

**Group Reinforcement**

Reinforcement of a behaviour can happen in different ways, by increasing a positive behaviour (positive or negative reinforcement) or decreasing a negative one (punishment).

Children are very responsive to influence of their peers. This can be used to encourage performance of infrequent by desirable behaviours. In group reinforcement, rewards (for example activity or privilege) can be given to the entire group depending on the collective behaviour of individuals within the group.

**Positive reinforcement** consists of presenting a positive reward (physical reward or friends cheering up) after a correct behaviour in order to increase such behaviour. The reward has to be meaningful
and if the reward is meaningful and desirable to the entire group, group members are more likely to pressure one another to behave in the appropriate manner.

Positive reinforcement must happen much more often at the start of learning a skill and then reduced as the child increases their proficiency.

**Negative reinforcement** occurs when something already present is taken away as a result of a behaviour, such that the behaviour that led to this removal will increase in the future because it created a favourable outcome. For example, Bob now says 'Hello' to his mum's friends to avoid his mum nagging him about it (Bob increases a positive behaviour via the removal of his mum nagging him).

**Corrective feedback** can be used when a child doesn’t act as is expected during the session. The teacher (or the computer) should point to the specific behaviour and give the child an opportunity to do the action again. Teachers or the computer should follow the three steps below to give corrective feedback: (1) point to the specific behaviour that the child performed incorrectly, (2) use a statement to describe how the behaviour impacted others (e.g. I do not like it when you do not share your paper with John), (3) ask the child to perform the specific appropriate behaviour and (4) praise the child for performing the specific appropriate behaviour.

**Punishment** is used when one wants to decrease a negative behaviour. This should be used as rarely as possible as learning is better when one focuses on positive rather than negative behaviour. Time out is an example of punishment.

### 3.2.5 Generalisation enhancers

Generalising skills is the ability to transfer the skills and information gained in one setting or task to another task or setting. For example, a child has been taught to *give compliments* as a skill in the classroom, generalisation has been successful if the child can then give compliments effectively to peers, siblings, parents or others effectively and at the right time.

Mediated generalisation is the act of the self-committing to a specific behaviour and following through to real life actualisation. It happens all the time, when someone decides to learn a new language and goes on to learn it, to play a new sport and go on to practice until you are good at it, becoming a great builder in Minecraft.

In teaching social skills we refer to **mediated generalisation** when a person practicing social skills, set themselves the goal of applying their acquired social behaviour in a natural setting, and then go on to actually show the social behaviour in the real world.

In game terms, providing the player with opportunity to choose a skill, providing a space for them to imagine themselves in different situations using that skill and committing on carrying it out in the real world and reporting back on their actions, would lead to generalization.
It is generally advised that the teacher plays a leading role in the generalisation activities, as they are the most likely persons to identify the needed skills and to prompt and coach students in the use of the skill when the situation arises during the day. In addition we suggested a mediated generalization approach - by mediated this means by the student themselves through support from the PSL platform.

**Mediated Generalisation** consists of four elements: **self-recording, self-reinforcement, self-punishment** and **self-instruction**. In the ProSocialLearn project these elements are enhanced using the platform, but as a game developer you need to be aware of these and utilise them as part of the approach to the learning activity.

- **Self-recording**: Provide ability for students to select and rank their own perceived level of proficiency in the skills prior to the game and post game or activity.
- **Self-reinforcement**: Allow the student to decide how many points they should be awarded for appropriate behaviour / showing of skills. This may follow a previous round where the teacher or the system determined how many points the student should receive, and later asking the students to determine their points under the teacher’s supervision.
- **Self-correction**: Allow the student to take responsibility for failing to achieve a skill. Important to note the **language need to focus on the child’s accountability**, i.e. “You didn’t earn your points” - and not “I am taking points away.”

At primary school age, taking away points already earned may result in behaviours even more problematic than the ones being targeted.

For the range of generalisation techniques, see the generalisation cards that are a part of the prosocial game design canvas explained in section 5.
4  Prosocial games

4.1  What are prosocial games?

In a nutshell prosocial games are games that are designed to teach prosocial skills. Within this project we focus on ages of between 6 or 7 to 10 or 11 years old, as evidence shows that this age group is amongst the most receptive to learning these skills, particularly using a behavioural approach, i.e. learning by modelling and learning by doing. This age range is what is covered in the first three years of primary school or elementary school.

Prosocial games are generally designed as classroom activities, and are supported by material for instruction, play, feedback and suggestions for generalisation activities. The skills are closely related to one another and have immediate, direct and tangible benefit to children. Whilst some skills are more fundamental, others build on top of existing skills, for example the skill of being able to introduce yourself come before skills of dealing with another person’s anger.

4.2  Why use games for teaching prosociality?

Games, particularly games that involve a group of players offer a dynamic approach for developing and refining fundamental life skills for children. Children learn from each other, encourage each other, support each other, solve problems together, and share joys and disappointment.

The parallels between a game world and interactions and the real world and interaction, if made explicit, can indeed provide the opportunity to practice real-world skills over and over again with enough variety, a range of positive reinforcements and just-in-time corrective feedback to keep the players engaged. The table below presents some of the aspects of digital games which can be used effectively to provide a variety of learning principles for prosocial skills. (Gee1)

<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity / Roleplay</td>
<td>Taking on an identity or playing a specific role in the game, thereby extending individual’s perspective on particular situations and actions</td>
</tr>
<tr>
<td>Interaction</td>
<td>The interactive relationship between player and game world / between player and system, between player and teacher/mentor, between player and player must be carefully considered.</td>
</tr>
<tr>
<td>Production</td>
<td>The ability to players to author or co-author their experience whilst</td>
</tr>
</tbody>
</table>

Table 2 - Aspects of digital games to be used to provide learning principles for prosocial skills. (Gee²)

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-ordered problems</td>
<td>The scaffolding of skills, or problems, such that earlier problems helps solve later more complex problems, simpler applications of skills before more complex situations.</td>
</tr>
<tr>
<td>Pleasant frustration</td>
<td>Keeping the challenge doable but with stretch goals, the first attempt need not always be successful, however the effort should be acknowledged, highlight the difficulties to focus on or using increasing difficulty mechanisms.</td>
</tr>
<tr>
<td>Thinking laterally in differing contexts</td>
<td>Encourage thinking about alternatives situations and different contexts in which the skills applies</td>
</tr>
</tbody>
</table>

Group play can create a ‘learning social laboratory’ for children, a place to test their social behaviour, practice new behaviours and define and redefine themselves among friends. Group play provides a range of therapeuetic factors or powers to children including:

- **communicative power**: since children naturally express their conscious and unconscious thoughts and feeling better through play than by words alone,
- **teaching power**: since children attend to and learn better when play is used to instruct,
- **abreaction power**: since children can relieve past stressful events and release the associative negative emotions in the safe environment of play world.

Group play thus has been shown to have several advantages including:

- Promoting spontaneity in children, which in turn encourages participation in play and willingness to take risks to explore.
- Fostering learning in children by their observation of different ways to express emotions and behaviours and different ways to cope and solve problems.
- Serving as a microcosm of society and providing significant opportunities for children to set limits and reality test with others.
- Providing children with opportunities to practice positive social behaviours, master new social skills and give and receive help from others, and experiment in a safe environment with different ways of expressing emotions and behaviours.

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Children learn positive social behaviours when adults and peers actively teach, model, reinforce and coach them. Although we are not replacing adults or peers through the prosocial learn platform we are able to provide positive instructional strategies, rewards and corrective feedback that are critical in promoting children’s learning and engagement. Through conceptualising the game as learning activities and by incorporating feedback, reflection and generalisation, we can build games that successfully transform skills from the game world into real-world settings.

### 4.3 Social and Emotional Skills Games in the School Context

As noted in section 3, considerable evidence exists to indicate that prosocial skills can only be successfully taught in a positive environment. The teacher and the school as a whole must provide a learning climate with the physical structure and learning programme that supports encouragement, reassurances and rewards for the children aligned with prosocial perspectives. Most primary schools provide some support for social and emotional skills of their students.

In order to successfully integrate your prosocial games seamlessly into regular school practice, it is imperative to produce material that makes the games accessible to teachers and present themes that can provide flexibility for teachers and the school to focus on the element they feel are the most relevant in their situation.

The teaching support material which as the games developer you must provide includes standard teaching overview or teacher’s guide. At the very least the games developer should clearly cover elements such as summary of activity, age range/grade range, skills covered in the game and learning objectives, amount of time required, classroom and technical requirements. It is highly advisable that a game walkthrough, a high-level game model, curriculum connections, and detailed instructions for the learning activity are also included. The best way of producing this guidance is to work closely with teachers in the development of the games, to get their feedback early on and understand how they will use it in the classroom.

The table below is a template and description of the elements needed in a teacher’s guide:

<table>
<thead>
<tr>
<th>Element to provide</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary *</td>
<td>A summary of the game and the lesson(s)/ learning activity akin to an elevator pitch</td>
</tr>
<tr>
<td>Age range/Grade range *</td>
<td>Appropriate age and grade levels for the activity</td>
</tr>
<tr>
<td>Learning objectives *</td>
<td>List of learning objectives of the activity incorporating targeted prosocial skills</td>
</tr>
<tr>
<td>Time allocation *</td>
<td>Time needed for the learning activity. Time needed to complete the game by itself. Whether the activity is a one off or repeated. Include</td>
</tr>
<tr>
<td>Element</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>student time required outside the classroom (e.g. playing game at home say as homework)</td>
<td></td>
</tr>
<tr>
<td>Teacher time required outside the classroom (preparation, grading etc...)</td>
<td></td>
</tr>
<tr>
<td>Classroom and technical setup *</td>
<td>Is the activity played individually or in groups? Group size? Table arrangements? What device? Students per device? Any special requirements (input devices, earphones, noise levels, lightening). Any additional material needed</td>
</tr>
<tr>
<td>Skill Link</td>
<td>Description of social and emotional skills that are incorporated</td>
</tr>
<tr>
<td>Activity Walkthrough</td>
<td>Images and short descriptions to allows teachers to quickly review the steps of the game /activity</td>
</tr>
<tr>
<td>High-Level Game model</td>
<td>A visual or textual explanation of the underlying model of the game so that the teacher can understand the decision points and strategies available to their students.</td>
</tr>
<tr>
<td>Curriculum Connections</td>
<td>A table of subjects in which the activity can be integrated into, including links to core topics of literacy and numeracy</td>
</tr>
<tr>
<td>Instruction</td>
<td>Ideas for lessons or full lesson plans that the teacher can use to complement the game.</td>
</tr>
</tbody>
</table>

**Table 3 - Elements for the teacher’s guide**

**Process of using a prosocial game in a school**

The following is a general scenario of how a school may use the games and platform developed in this project. Let us assume that at the beginning of the year, a school has already reviewed the material that explains the platform and have decides to subscribe all their students. The following is a flow of how the activities may unfold.

- **Charting the Territory**

  At the beginning participants will assess their needs and select the skills most appropriate to them. Essentially they go through the description of the games and the skills that they cover, selecting which games or skills to focus on. This can happen in a variety of ways.

  - the school may have a social and emotional curriculum such as CASEL or PSHE curriculum, and require their students to complete all the games offered by the platform.
  - teachers could go through the list of games and associated skills and decide, based on the particular challenges in their context (e.g. our kids need to improve their ability of working in groups) which they prefer
  - students may be asked to evaluate their own level of competence in particular skills and be encouraged to identify and decide together with the teacher what skills and games they want to focus on.
These skills now become a focus for a specific period of time (e.g. a month), and can be revisited when classroom and playground incidents give occasion. The level of involvement may vary in different schools.

- **Using the learning games**

Based on the priorities set in either the school curriculum or the teacher or students will select one or more games to use. The games need to provide the ability to be integrated into regular classroom activity. The process described in detail in section 3 includes:

- **Setting the stage for the students:** this may take several forms, including direct instruction, but also activities incorporated in other subjects (e.g. literacy, arts) see section 3.2

- **Playing the games:** this will require specific time allocation, preparation or equipment, classroom setup etc. During the game and immediately after, there needs to be feedback to the students as to their performance, this could be peer feedback, teacher feedback as well as feedback from the game and platform.

- **Reward allocation:** Rewards that are given in the game should be translated into tangible rewards based as explained in section 3.2.4 and sub sections.

- **Debriefing and reflection:** This may take several forms, including discussion, storytelling, creating an artefact. As described in 3.2.5.

- **Generalizations/ extensions:** during the unit, but also after its completion, the students may have collective or individual assignments to monitor the practice of their newly learned prosocial insights and skills in new contexts.

A standard teaching unit will accompany each game, but teachers will have the flexibility to adapt it to their needs or design their own units if they choose to. An easy way for teachers to report what they have done with the game beyond the standard unit, will enrich the value of each game for other teachers greatly.

### 4.4 Skills beyond the games

The success of the prosocial games and the platform is dependent on practice and support beyond the game play. The insights acquired and the skills learned must be practiced outside the game, in the classroom, in the playground, at home, until such time that they are woven into the students’ everyday experience and repertoire of behaviour.

Therefore the over-arching processes need to include persistence of focus on the relevant skills (e.g. through posters, worksheets, reminders and refreshers) as well as scheduled benchmark points of revisiting these skills and sharing relevant experiences. Even at the price of student boredom, the skills should be taught and practised until they are nearly automatic or ‘overlearned’ as explained in section 3.

Evidence indicates that many programmes that address prosocial skills in schools begin with appropriate organisation, good intentions and plenty of enthusiasm. However programmes are often discarded a few months later because of lack of oversight. The constant stream of requirements and
responsibilities placed on teachers makes intervention programs such as those that focus on social and emotional skills more likely to fail in the absence of clear guidance and programme coordination. Teaching social and emotional skills therefore is an on-going effort, require the full support of the school and the teacher and ideally have a dedicated coordinator.
5 Designing Prosocial Games

The previous chapters provided a basic understanding of what prosociality is and how to teach it, including prosocial skills and skillstreaming, what serious games and prosocial games are, and why games and skillstreaming are a good fit.

This chapter provides you with a concrete method to design games teaching prosocial skills following the skillstreaming approach. Researchers and practitioners have created a large number of methods and frameworks for applied or serious game design. The present method is an extension of the intrinsic skill atoms method, itself grounded in the so-called atomic intrinsic integration approach. Both derive their names from the fact that they take to-be-taught-skill(s) as the centre of their design, and that they set out to unite game and learning to such an extent that learning the skill becomes an inherent, intrinsic part of playing the game: to master the game is to master the learning material.

For example in Memory game, to play the game well and win inherently requires players to memorize: Playing and winning the game requires – and thereby trains – the skill of memorization. In the same way, the intrinsic skill atoms method helps designers create games where playing and winning the game requires and thereby trains the to-be-acquired target skill. This skill focus makes the intrinsic skill atom method a perfect match for skillstreaming. Evidence suggests that “intrinsically integrated” serious games are more effective, and that the intrinsic skill atoms method does in fact help designers in creating such games.

The present method extends the intrinsic skill atom method to explicitly include pedagogical specifics of prosocial skill learning and the skillstreaming approach. It consists of three parts working together:

- the method itself, as a set of consecutive phases with concrete instructions,
- a prosocial game canvas, which helps designers aggregate and survey information gathered during the process,
- and a series of card decks and reference guides that makes other required information easily accessible.

The next section (5.2) will give a brief overview over each of these parts. The remaining bulk of the chapter will present the method phases in detail. In the course, a worked example will illustrate each phase.

5.1 Overview

http://shura.shu.ac.uk/3556/
http://dl.acm.org/citation.cfm?doid=2818187.2818291
5.1.1 The method

The method consists of seven phases, each of which generates one or more different outputs as a milestone:

- **strategy** ends in defining a clear goal for the outcome to be achieved with the game,
- **research** produces a filled-out prosocial game canvas (see below) with all framing information you need to generate fitting design ideas,
- **ideation** distils this information into innovation stems that are then used to produce a large number of ideas,
- **canvassing** stress-tests ideas to result in a small set of vetted and more detailed ideas,
- **prototyping** takes these ideas and turns them into playable prototypes that are iteratively playtested and revised to identify and validate the strongest idea and validate all important design decisions about it
- **development** and **evaluation** take this prototype and turn it into a finished game

![Figure 1 – Methodology of Prosocial games design](image-url)
5.1.2 The canvas

A key component of this method is the **prosocial game canvas**. Analogous to other successful visual design tools like the [business model canvas](http://www.businessmodelgeneration.com/canvas/bmc), the [customer journey canvas](http://files.thisisservicedesigntinking.com/tisdt_cujoca.pdf), or the [product field](http://productfield.com/), the prosocial game canvas gives all team members an easy overview of all components of a successful prosocial game, and organizes and presents all information you will need during the design process.

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To use the canvas, you can either print out the provided diagram at the end of this guide on an outsized sheet of paper (A3 or larger), or draw your own canvas on a large paper sheet.

The canvas is split into two regions which present (and collect the information of) the two major phases of the method: The outer “frame” is literally the problem framing of the design: In four rubrics, it collects all the information that together constitute the design space in which your game has to fit, the problem it has to solve:

- **Outcomes**: The goal you try to achieve with your game, the skills your target audience has to learn for that, and the assessment of whether your game was successful. This information you collect in the strategy phase, probably with input from the research phase.
- **Resources**: The requirements your game has to meet, and the people, places, materials, and technology that you will have at your disposal, collected during the research phase.
- **Audience**: The interests, abilities, and (cultural) backgrounds of your target audience, collected during the research phase.
- **Inspiration:** Existing games, scenarios, genres, and mechanics that you feel might fit or inspire your particular problem, collected during the research phase.

The inner part of the canvas consists out of all components that your game design needs to entail: it is a memory aid of the general components that make of a game, and of the specific components that are unique to prosocial game.

The circle in the centre consists of the five core components of the game’s rules or mechanics:

- **Skill challenge:** The central challenge that makes reaching the game’s goals hard – which in a prosocial game is the central prosocial skill that the player tries to learn. In golf, the main challenge is swinging the club in such a way that the ball lands where you want it to land. In a game like Charades, where players act out a word the other players have to guess, there is a dual challenge: acting out words in a way other players understand, and guessing what people mean. In Poker, the challenges are bluffing, seeing through the bluffs of others, and betting strategically. As you can see, many entertainment games already teach and use social skills like communicating or guessing another person’s intention.

- **Goals:** The win states of the game. In golf, the goal is to finish a course with as few swings as possible, with the optional goal of staying below the “par” of the particular course. In a first-person shooter like Doom, the goal is to reach the end of each level alive.

- **Actions:** What players do to reach their goals. In golf, the actions are choosing where to play the ball and then playing the ball. In Memory, the actions are picking up cards.

- **Feedback:** How the game tells the players how well they are doing in achieving their goals. In golf, the feedback is seeing and hearing where the ball lands (including the satisfying ‘plop’
when it lands in the hole). In Monopoly, it is the streets and houses and money piling up in front of the player. Feedback often entails some form of reward. In many role-playing games, for instance, beating a monster results in loot that monster held, which the player can use to buy better weapons and armour.

- **Enjoyment**: The particular kind of positive emotion or ‘fun’ that your game shoots for. Many social games go for an experience of schadenfreude, for instance. First-person shooters go for experiences of competence, challenge, accomplishment, whereas a heavily narrative game may want to evoke wonder or nostalgia.

The box around the central circle describes the larger contexts, events, and design that the core game is embedded in:

- **Assessment**: Any applied game is beholden to a larger purpose behind people playing and enjoying the game. Hence, you need to think about how to embed assessment in your game and/or its setup to see whether it delivers on its prosocial learning goals.

- **Preparation**: A core component of teaching prosocial skills is to instruct and model the skill. Preparation captures who (a teacher, parent, the game software ...) will do what to set up the game and instruct and model the skill.

- **Debriefing**: Easily the most important part of learning with any game, debriefing entails all activities players engage in after (or during) gameplay to reflect on and draw lessons from what they have done in the game and how it relates to actions in real life.
• **Generalizing**: Just like prosocial skill learning starts with instruction and modelling, it ends with repeating and transferring what was done in the game contexts in multiple other real-life contexts.

The different components of the inner canvas part map onto the main steps of the method for learning prosocial skills: Instruct and Model are entailed in the Preparation component, Role Play is the Skill Challenge of the game, Debrief is covered in the Debriefing component and Generalize in the Generalising component.

### 5.1.3 Resources

Next to the canvas, our method supports the design process with a number of card decks that make crucial information easily available for each. Each card presents one of the various patterns that can be found in the reference guide, and each deck of card assembles the patterns relevant for one particular design step.

**Skills deck**: The core prosocial skills that can be taught, each showing (a) the name and (b) a description of the skill, (c) thematic groups of skills. You will collect these during the strategy phase to determine the skills you game needs to teach, and to focus the game ideas.

**Game Mechanic deck**: Each card states a social game mechanic. You will collect these during the (design) research phase to choose inspiration for your game.

**Teaching Methods deck**: Including preparation cards for common forms of setting up, instructing and modelling social skills. Debriefing cards for common forms of debriefing after or during gameplay. Generalising cards for common forms for generalizing activities.

### 5.2 Step by Step

#### 5.2.1 Strategy

**a. Outcome definition**

Determine what prosocial outcomes you wish to achieve with what target audience. Write both into the “Outcomes” component of the canvas.

*Example: Gillian game designer and Peter product manager work with Cheryl client to discuss a new prosocial game project. Cheryl is leading the LearnWell charter school group that have recently adopted social-emotional skills as an underlying educational focus of their curriculum, and as a result, implemented a regular assessment of students’ emotional intelligence. The results indicate a strong gender gap, with male students performing worse from the 7th grade on. Gillian, Peter, and Cheryl decide that their game should intervene right at the onset of this gap. So they note LearnWell male 7th grade students as the target audience and increased in cooperation skills as the outcome.*

**b. Skill identification**
Determine which **target skills** are required to achieve your outcome. Together with your stakeholders, have a look through the **skills deck** to find what skill(s) your target audience most lacks that prevent the outcome from occurring. Pull out the most relevant cards and discuss. Once you have narrowed down to a smaller number, ideally between one to three skills, although depending on the game different parts of the game may focus on different skills, and skills maybe introduced sequentially as each one is achieved. No single part should try and introduce more than one or two new skills to focus on. Think about the challenge of learning new abilities in a game; trying to get the player to learn too many abilities at the same time will often confuse them.

The skill cards may have **prerequisite skills** which they depend on. On the card deck this is denoted by the skill level. Generally a skill level 1 precedes a skill level 2 etc. Decide which of these skills, you also have to train the students in, because they are also lacking in your target audience. Note the skills that your game needs to train in the “Outcomes” component of the canvas and put the relevant cards aside.

**Note**: It is likely that you will need to defer skill identification after conducting user research (see below), or have to revise your initial assumptions about skills that need training.

*Example*: Gillian, Peter and Cheryl look through the skills deck to identify potential skills to target. They quickly agree on “skills for feelings” as the obvious focus of the game, however they are at a loss which one of the many possible to target: the emotional intelligence assessment the schools use doesn’t speak to individual skills, and Cheryl is too far removed from day-to-day teaching at the school to be able to say what the targeted students in particular are missing. Hence, they decide to defer definition until Urs, the user researcher, has done some interviewing and observation in schools.

c. **Assessment definition**

Turn the skills deck cards for the skills you focus around: On the back of the card, you will find possible **measurement instruments** for the skill. Determine which one you want to use, together with a current **baseline measure** for your target audience and a **target** measure you want to achieve. Write these down in the “Assessment” component of the canvas.

**Note**: You will likely have to conduct user research first to be able to determine baseline and target measures. It may also be that part of your game is a pre-test/post-test design where the game assesses players’ skill before and after playing the game. Finally, based on your game ideas, you may also have to change you assessment tools.

*Example*: Gillian, Peter and Cheryl have an easy time determining the overall outcome measure of the game, as the emotional intelligence assessment LearnWell uses is administered every year and gives an existing **baseline measure**: the emotional intelligence scores of the current year. As target, Cheryl suggests to try and half the gender gap between boys and girls by the next measurement, but Peter counters that based on comparable activities for emotional intelligence
training, this is too ambitious for a one-time intervention. He suggests an immediate increase of 15% a week and two weeks after the game was played. Again, they defer defining assessment of prosocial skills until they know more about their users.

5.2.2 Research

a. User research

Conduct formative user research (such as interviews or contextual inquiry) about your target audience to determine:

- **Interests**: you may want to connect to: what themes, things, practices, people are important to them right now and why? What personal motives and interests are linked to the target skills in question in their life world?
- **Abilities**: What kind of skills and abilities does your target audience already have they might be proud of and enjoy using and displaying?
- **Backgrounds**: What language(s) does your target audience speak? What social norms, expectations, meanings exist around the target skills in the target audience that should be heeded? How literate in written and spoken language, film, game genres is the target audience?

Write the results down in the “Audience” component of the canvas.

**Note**: We don’t expand here on methods of formative user research, as there are many excellent existing guides out there. Have a look at Goodman and Kuniavsky’s *Observing the User Experience*, Portigal’s *Interviewing Users*, or *Rapid Contextual Design* by Holtzblatt and colleagues.

**Example**: Two weeks after the initial meeting of Peter, Cheryl and Gillian, they sit down with their user researcher, Urs, who has conducted some interviews with students from the target audience, as well as their teachers, also observing them during class time and on the school ground. Observations of the teachers confirm that a group of boys from the 7th grade on that they get into fights more often and are viewed as abrasive in their behaviour by their peers. Closer observation reveals that the students in question share among them a background of a peer culture of...
signalling coolness, trashtalking, and strength, where showing or empathising with emotions is viewed as a weakness, which he notes under audience in the canvas. As a result, they have difficulty viewing and responding to the variety of emotional expressions of their peers as anything but either aggression or weakness. Looking through the skills deck with the rest of the team, Urs confirms that students in the target group lack many skills, however the most basic ones lacking are expressing and identifying emotions, together with valuing the two as something positive and worthwhile. The team thus notes these two skills down under target skills in outcomes. Finally, Urs notes that Marvel superheroes are a shared interest of the students.

b. Requirements gathering

Conduct formative research with all relevant stakeholders to determine

- **Resources**: What spaces, time windows, material resources and technology will you have available to run the game with? For instance, you may have to work within a standard 45-minute school session with no digital technology access.
- **Mentors**: What people can you involve in setting up and running the game, as well as instructing, modelling, reflecting, and helping with generalising prosocial skills? What kind of support or training do they require to act as such? For instance, you may work with primary school teachers with no prior experience running games. The generalising deck holds a set called mentors that shows common mentors and common characteristics, challenges, and needed support.
- **Requirements**: What functional and non-functional requirements do all involved stakeholders bring to the game? These may be particular assessment and reporting needs by organizations involved, privacy and data protection and protection of minors legal regulations, religious restrictions of your target audience, etc.

Write the results down in the “Resources” component of the canvas.

*Note*: There are great existing guides for this step, such as Robertson and Robertson’s Mastering the Requirements Process and Goodman and Kuniavsky’s Observing the User Experience.

*Example*: Interviewing Cheryl, the design team learns that the LearnWell schools have two 45 minute slots in their week dedicated to social-emotional development, together with a dedicated teacher – a luxurious situation for certain. The school also recently bought two class sets of tablets, and there are two class size computer labs with PCs available. Cheryl confirms that LearnWell parents are generally very active and engaged in the education of their children, so the team notes parents together with the social-emotional teacher as mentors, laptops and PCs as material, and 2x45 min/week as time slots under resources.

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13 http://amzn.to/1oCp14N
14 http://amzn.to/1XOi1f2
c. Design research

Pick up the **game design deck** and have a look at the cards that are indicated to match your target skills: these may be game scenarios, genres, or mechanics that have been found to fit the skill you want to teach. Choose a number of these cards that particularly inspire you and put them aside.

Write the resulting scenarios, genres, or mechanics down in the “Inspiration” component of the canvas.

*Note*: You don’t need to limit yourself to the card deck: Any game, idea, media offering that your team thinks of as inspiring for your game is perfectly welcome – just add those to the list.

*Example*: Going through the game design deck, the team immediately notes that expression guessing and hiding games like Charades lend themselves to expressing and identifying emotions, so they note “expression guessing games” and “Charades” under *inspiration*. Gillian has recently played the independent game Undertale and found its core mechanic deeply inspiring: instead of fighting monsters, players can choose and try to also guess their particular inner state and what they might be lacking emotionally. Doing the right thing to a monster ends the combat, often quicker and with better outcomes than fighting it. Gillian finds this a good template for their outcome, particularly given the background of their target audience.

### 5.2.3 Ideation

Ideation is where the rubber hits the road: turning all the information we collected into actual game ideas. Idea generation often devolves into some form of “brainstorming”: just putting a number of people in a room and task them to “have ideas”. In contrast, our method incorporates two crucial improvements: It primes idea generation with innovation stems[^15] that distil and formulate the collected framing information in an inspiring form. And it avoids groupthink by allowing individuals to first collect their ideas through brainwriting[^16].

*Note*: We structured the overall ideation process to fit the tried and tested rules for idea generation by product innovation agency IDEO. To better understand why we designed the process in the way we did, it may be useful to read those rules and their explanation.

#### Seven Rules for Brainstorming

1. **Defer judgement.** You never know where a good idea is going to come from. The key is make everyone feel like they can say the idea on their mind and allow others to build on it.
2. **Encourage wild ideas.** Wild ideas can often give rise to creative leaps. In thinking about ideas that are wacky or out there we tend to think about what we really want without the

[^15]: http://www.humantific.com/origins-of-how-might-we/
[^16]: https://library.gv.com/note-and-vote-how-to-avoid-groupthink-in-meetings-24e829e43295#.u5k32jia1
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constraints of technology or materials.

3. **Build on the ideas of others.** Being positive and building on the ideas of others take some skill. In conversation, we try to use “and” instead of “but.”

4. **Stay focused on the topic.** Try to keep the discussion on target, otherwise you can diverge beyond the scope of what you’re trying to design for.

5. **One conversation at a time.** Your team is far more likely to build on an idea and make a creative leap if everyone is paying full attention to whoever is sharing a new idea.

6. **Be visual.** In live brainstorms we write down on Post-its and then put them on a wall. Nothing gets an idea across faster than drawing it. Doesn’t matter if you’re not Rembrandt!

7. **Go for quantity.** Aim for as many new ideas as possible. In a good session, up to 100 ideas are generated in 60 minutes. Crank the ideas out quickly and build on the best ones.

From: IDEO.org Brainstorm Rules

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### a. Generating innovation stems

Innovation stems are short, inspiring statements that prime idea generation, usually started with the words “How Might We ...?”

To form innovation stems, first identify raw materials to draw on. These are:

- **Interests** you identified in your user research
- **The skills** that need to be taught you identified in your strategy and user research
- **Resources** at your disposal you identified in your requirements gathering
- **Inspirations** to build on you identified in your design research

Now, generate at least ten innovation stems by pairing two of your raw materials into a “How might we ...?” sentence. Here are some common pairing templates that have proven useful in design:

- Template: “What might be like <entertainment game with same skill challenge> for <target activity>?"
  
  Example: “What might be like Frogger for not interrupting others?”

- Template: “How might we spark <interest> in <skill challenge>?"
  
  Example: “How might we spark the pride of rapping in taking turns?”

- Template: “What might be an <inspiration> game about <skill challenge>?"
  
  Example: “What might be a twitch reaction game about joining a group?”

- Template: “How might we make a <skill challenge> game with <resources>?"
  
  Example: “How might we make a using nice talk game with paper, scissors and parents?”

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17 http://www.designkit.org/methods/28
Example: Gillian takes the lead on moderating the idea generation. From the material collected on the canvas so far, she forms the following innovation stems:

- What might be like Charades for identifying emotions?
- How might we spark interest in superheroes around identifying and expressing emotions?
- What might be an Undertale game about identifying and expressing emotions?
- How might we make a game about identifying and expressing emotions with tablets?

b. Brainwriting

Collect a team to generate ideas. For each innovation stem:

- give people 5 minutes to silently write down at least 10 ideas on individual post-its
- have people share their ideas by reading them out aloud and posting them on a large shared surface; for each idea, give the other team members a chance to add additional new ideas they think of in response to the idea just presented.

Example: Gillian presents each prompt and then has all team members silently note at least ten ideas for the prompt. Then, she lets each team member read out aloud and explain each idea they noted, while posting the idea’s post-it on the whiteboard in front of them. Some of the ideas that come up are:

- “Taboo” for emotions: You have to have your team guess the emotion you’re describing, but there are a number of words you can’t use, including the name of the emotion itself.
- Who can express the most emotions in one minute?
- An RPG where you defeat monsters by clicking on the labels of the emotions they express
- And RPG where you overcome obstacles by choosing the right response to their emotions: consoling sad, calming angry, etc.
- Game prescribes emotions to make, players make faces in front of camera, score a point for each correctly expressed one
- Supervillain cross-examination: convince the examiner you feel an emotion when you don’t
- RPG where the villain’s superpower is manipulating emotions and the hero’s ability is recognizing emotions
- Chinese whispers with emotions: Students make a face in tablet and types in emotion name, hands tablet forward, next student only sees face and has to make same emotional expression recorded by tablet, writes emotion name, hands it to next. Challenge: Make tablet arrive back at beginning player with same emotion

c. Idea selection

Cluster post-its with similar ideas together. Have people vote on the clusters of ideas they find most promising: Each team member gets (number of clusters) * 2 dots and can give each cluster between 0 and 3 dots. Count dots together to form a ranked list of clusters by number of votes. Have team members discuss the results:
Are they satisfied with the result? Why? Why not?

If multiple clusters tie for votes: Which one should rank higher?

Choose a number of ideas you want to pursue for further analysis and prototyping: a top 1, 3, 5, etc. For the top x clusters, have team members identify the idea or combination of ideas in the cluster they find strongest. If team members can’t agree, engage in another dot-voting for the cluster. At the end, you should have 1-5 strong initial game ideas the team agrees on.

Example: The team dot-votes ideas and the Taboo for emotions comes out strongest: discussion shows that everyone agrees that it is straightforward, easy to explain and run, and doesn’t require technology. However, the team also finds that prior ideas around superheroes would really appeal to the target audience, so they spend an additional round brainwriting how to combine “Taboo for emotions” with a superhero theme.

They arrive at three ideas, one of which is titled “Emotional Escape”: The player is a superhero who can evoke any emotion in their counterpart by expressing the emotion. The hero is trapped by the villain and to escape, the hero has to put the villain into the right emotional states that will let him release the hero. However, the hero is held in captivity, so they can’t use all communication channels: sometimes their hands are tied, sometimes their mouth is bound and they can’t talk, etc. If the player can’t do it successfully in a given time, they lose: the death contraption the hero is captured in snaps shut and kills them.

(Note: For the sake of space, we will only flesh out the process for one idea, even though you should be canvassing and prototyping multiple top-ranked ideas to then select from them.)

5.2.4 Canvassing

You should have a series of strong initial game ideas now. This step is about fleshing them out in detail and checking whether they hold on closer scrutiny.

a. Idea canvassing

For each selected idea, make a new prosocial game canvas.

First, detail your game idea by filling in the inner circle of the canvas:

- **Skill challenge**: The central challenge of the game, in a prosocial game, the prosocial skill that is being taught.
- **Goals**: Game states the uses attempts to achieve. Goals are typically explicitly suggested by the system, but must be actively pursued by the user to be goals.
- **Actions**: What the player can do to approach their goals.
- **Feedback**: Sensory information that informs the user of system state changes resulting from her actions or autonomous system processes; entails immediate feedback on each action and progress feedback on the user’s accumulated progress.
- **Enjoyment**: The enjoyable experience your game evokes – what makes it fun.
Examples: The team fleshes out their game idea with the canvas:

- The skill challenge is expressing and guessing emotions under constraints within a given time, such as only using body language, gait, voice sound, words, gestures, etc.
- The goals are to successfully express and guess 5 emotions each with a particular constraint within 3 minutes.
- The actions are split into three groups: One player becomes the hero who is trapped and has to express emotions suggested to them by the game. The hero can also skip an emotion, but that will result in the next constraint likely being harder. The others are the audience who has to correctly guess the hero’s emotions as quickly as possible. A moderator makes sure the hero doesn’t break the constraint.
- Feedback: The game suggests an emotion and a constraint to the player. If the audience guesses the emotion, the game counts up 1 point and displays the next emotion and constraint to the player. If the player breaks the constraint, the game/moderator makes a beeping sounds, and the players lose 1 point. A clock is running backwards too.
- Enjoyment: The team decides that like Charades, their game should target light-hearted comical social fun of goofy actions and slip-ups together with frantic, fast paced challenge of racing against the time.

Now, work through the middle components detailing the pedagogy of the game, i.e. how the teaching and learning must be supported in order to ensure the players are learning the skills:

- **Assessment**: How to assess whether your game meets its learning goals.
- **Instruction**: Who will set up the game and instruct and model the skill.
- **Debriefing**: How will players reflect on and draw lessons from what they have done in the game and how it relates to actions in real life.
- **Generalizing**: How will players repeat and transfer what was done in the game contexts in multiple other real-life contexts.

For each of these aspects, you will find do’s, don’t, and best practices in section 2 of this guide. Revise ideas if needed to answer to all aspects of the canvas. Discard ideas that cannot satisfyingly cover all aspects required by the canvas.

*Example: Working through the canvas, the team notes the following things:*

- **Assessment**: The team realizes that if the game is designed as a multi-player game, it will be difficult to get any clear assessment for identifying emotions, as the whole audience team guesses. The team decides to change the game design: heroes express an emotion, then the audience expresses an emotion together and the hero has to guess, etc. The team decides to measure performance for the hero player: the number of emotions expressed by the player that are correctly guessed per game and the number of emotions expressed by the others correctly guessed by the player are rough measures for expressing and identifying emotions.
Teachers in the moderator role can add optional ratings if they like, using the scales provided on the back of the two skill cards identifying/expressing emotions. Technology-wise, the team decides that the game could be played with cards – one deck for emotions, one for constraints – but decides to support the superhero theme with a tablet app: The hero is seated in front of a tablet showing the hero the emotion to be expressed, the constraint, the clock ticking down, and a current score, with a button that allows to skip. The audience sees a tablet with the score, the constraint, and the ticking clock. The moderator sees the same screen as the hero, but has a button to flag a constraint break. The moderator also has an admin interface for rating students, setting particular constraints and emotions, and changing game settings.

- **Preparation**: The social-emotional skill teacher will set up the game at school. The team decides that in school, it would be fun to go for some props, by the hero having to put a costume on and being “chained” to a chair. The team decides that the game should feature videos of different ways emotions are expressed as “unlocks”: If the players win a game, they are rewarded with a video clip about e.g. how emotion shows in gait, which makes it easier for them to express and guess emotions with an “use only gait” constraint in later rounds. These videos serve as embedded instruction.

- **Debriefing**: The app should come with a booklet, the team decides, that helps the teacher flag and talk about particular emotions and their expression as they come up during the game, which are tied to the instructional video unlocks.

- **Generalizing**: The team finds an easy way to generalize across contexts is to let students take tablets with the game installed to their parents and play the game with them.

The team also canvasses the other ideas they prioritized, and find that two of them are hard to square with the prosocial pedagogy, so they drop these ideas.

### 5.2.5 Prototyping

After canvassing, you should have a smaller amount of fleshed out ideas that on paper ‘tick all the boxes’ of a prosocial game. However, no plan guarantees that it will work in reality. The heart of game design is iterative playtesting and revision to move towards fun.

**Note**: Again there are excellent textbooks on prototyping and playtesting. For these, we suggest Warfel’s [Prototyping](http://amzn.to/1n1EjPe), (Warfel 2009), Fullerton’s [Game Design Workshop](http://amzn.to/1QkUaAM) (Fullerton 2014), and Schell’s [The Art of Game Design](http://amzn.to/1XPNIXI) (Schell 2014).

#### a. Exploratory prototyping

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18 http://amzn.to/1n1EjPe
19 http://amzn.to/1QkUaAM
20 http://amzn.to/1XPNIXI
Create rough playable prototypes of your ideas. Playtest and revise for multiple quick rounds of iterations. The only rule for the kind and fidelity of prototypes is that they should enable players to actually practice the skill the game has as its core. Paper and craft prototypes often suffice for this. Once the actual “feel” and usability of individual interactions is tested, digital interactive prototypes are usually in order, using e.g. in-browser prototyping with Javascript or one of the many available game and app prototyping toolkits.

Example: The team starts prototyping the two remaining game ideas. For “Emotional Escape”, they write a number of emotion names on blank index cards and a number of constraints on others. First playtests are fun, but show that having constraints that only “block” one channel of expression are too easy, so the team decides that constraints should each only allow one channel (only words, tone of voice, gait, etc.), which works better. A first playtest with the target audience shows that they like the game and seem to learn, but that the title is not at all appealing, so the team knows to change that.

b. Prototype selection

Based on playtesting results, choose which final prototype you want to take further into development, using the voting method described in 5.3.3.c. Use the results to discuss and select a final candidate.

Example: After prototyping and playtesting the two top contender ideas, the team decides that Emotional Escape clearly works better, and so decides to go forward and focus on this idea.

c. Refining prototyping

You will now have a final prototyped idea to go forth and develop. Before development, you should iteratively playtest and revise all aspects of the prototype with all involved stakeholders, including preparation, debriefing, generalising, and assessment, to ensure out all design decisions that could derail development or make the game unsuccessful have been validated before committing full resources to development. Gradually increase fidelity and detail as certainty about design decisions increases.

Example: Tweaking constraints, game length, and emotions, the team quickly arrives at a core game design that holds the attention of the audience. They begin working on a rough interactive prototype of the application on tablets and tweak the interface until it is easily understood at a 2 metre distance – which is how far the audience will probably sit from the audience tablet. The art director tests out a couple of soundtracks and visual designs with the target group until settling on one direction that gets enthusiastic response. After about two weeks, the team has a finalized game design, interface, art direction and audio they feel comfortable with putting into high-polish production.
5.2.6 Development

The topic of development and implantation of games is beyond the score of this document. However for a good general introduction into game development, see Chandler’s Game Production Handbook21 (Chandler 2009).

5.2.7 Evaluation

Evaluation of games is equally a large topic. In the context of Prosocial, the reference document for evaluation is the D2.5 the Evaluation Strategy and Protocols which can be downloaded from the project’s website.

6 Conclusions

This document has provided an overview and detailed description for a prosocial game design methodology. Additionally it has provided a practical toolkit and guidelines aimed at game developers to support them in designing and developing games that teach prosocial skills.

The practical toolkit is a prosocial game design canvas, drawing inspiration from similar business design canvas, and it is further enhanced by a set of flash cards covering prosocial skills, patterns for game mechanics, patterns for preparations, patterns for debriefing and reflection and patterns for generalisation.

Through presenting a scientifically grounded pedagogy for teaching prosocial skills together with a game design methodology that draws from this knowledge, it is hoped that reader would create more effective learning games.
7 References


8 Appendix A

Prosocial Game Design Canvas
Skill Games Cards:

Below are two illustrated examples of the Skills Games Cards to be used with the Prosocial Game Canvas.

- **Using nice talk**
  - Skills for friendship
  - **Sub Heading**: Approaching and talking to others in a friendly way
  - Description: Starting and keeping a conversation with others.
  - **Quick Example**: Your friend tells you about his holidays. This requires your friend to start a conversation (looking at, walking up and saying something to you) and you to reply and keep the conversation active.

- **Sharing your things with others**
  - Skills for friendship
  - **Sub Heading**: When, with whom, why and how to share your things with others
  - Description: Approaching and talking to others in a friendly way.
  - **Quick Example**: You want to borrow a friend’s pen. You have to approach your friend and ask nicely by using a soft voice, smiling and using the world ‘please’ if you can borrow her pen.

Below is an abridged version of the cards. The full package with all 72 cards is available on the project’s Website and at [http://skillgames.playgen.com](http://skillgames.playgen.com)
<table>
<thead>
<tr>
<th>Skill</th>
<th>Task</th>
<th>Skills for friendship</th>
<th>Task details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>looks at you, introduce yourself and start a conversation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill</td>
<td>introducing others</td>
<td>Skills for friendship</td>
<td>&quot;Tom, this is Lucy; Lucy, this is Tom; both of you like chocolate&quot; You want to introduce your cousin to your friends. You have to look at your cousin, say &quot;Tom, this is Bill&quot;, repeat with your friend and say something about them</td>
</tr>
<tr>
<td>Skill</td>
<td>Joining in a conversation</td>
<td>Skills for friendship</td>
<td>Observing the conversation, deciding when to join, saying something relevant to the conversation. Your friends are talking about a movie. You have to wait until it is a good time to join the conversation, approach the friends and find something relevant to say</td>
</tr>
<tr>
<td>Skill</td>
<td>Joining a playgroup</td>
<td>Skills for friendship</td>
<td>Observing the activity, deciding when to join and asking to join the group Your friends are playing a ball game that you want to join. You have to wait until it’s a good time to join, ask nicely and play according to the rules.</td>
</tr>
<tr>
<td>Skill</td>
<td>Sharing about oneself</td>
<td>Skills for friendship</td>
<td>What, with whom, how and when to share about oneself You want to tell your friend about your new pet. You have to know when to share the information (availability of the friend), should speak clearly and ask if your friend has something to add</td>
</tr>
<tr>
<td>Skill</td>
<td>Sharing your things with others</td>
<td>Skills for friendship</td>
<td>When, with whom, why and how to share your things with others You want to share your extra racket with your friend so she can play with you. You have to know how to offer it, trust that she will not damage it and learn from where it went wrong (e.g. she broke it)</td>
</tr>
<tr>
<td>Skill</td>
<td>Learning about others</td>
<td>Skills for friendship</td>
<td>What, with whom, how and when to ask questions to learn about others Your friend wants to tell you about the cake he baked yesterday. You have to pay attention (look in the eye), show you are listening (nod), wait until he is done before you ask a question or respond</td>
</tr>
<tr>
<td>Skill</td>
<td>Being an active listener</td>
<td>Skills for friendship</td>
<td>Stopping other things, making eye contact, nodding or asking to clarify if not clear You like the bracelet your friend made you. You have to acknowledge that she has done something nice for you, tell her with a smile and wait for her response</td>
</tr>
<tr>
<td>Skill</td>
<td>Giving compliments</td>
<td>Skills for friendship</td>
<td>How and when to give compliments You teacher tell you she is proud of your work. You should accept the compliment, say thank you and say something about it if necessary (thanks, I worked hard)</td>
</tr>
<tr>
<td>Skill</td>
<td>Receiving compliments</td>
<td>Skills for friendship</td>
<td>Saying thank you and accepting a compliments Your friend is watching a movie you have seen before. You do not say what is going to happen next or tell him to watch something else but you let him enjoy the movie. You have to put yourself in another person’s shoes and think about what you would like to be done to you in this context and act on it.</td>
</tr>
<tr>
<td>Skill</td>
<td>Respecting others</td>
<td>Skills for friendship</td>
<td>Being attentive, empathetic, sympathetic, kind and supportive towards others</td>
</tr>
<tr>
<td>Skill</td>
<td>Respecting other’s personal space</td>
<td>Skills for friendship</td>
<td>Keeping at arm’s length You tell your friend they are sitting too close to you. Personal space is different from people to people</td>
</tr>
<tr>
<td>Skill</td>
<td>Not interrupting others</td>
<td>Skills for friendship</td>
<td>When and how to ask questions</td>
</tr>
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</tr>
<tr>
<td>Skill</td>
<td>Self-control</td>
<td>Skills for feelings</td>
<td>Developing strategies to regulate emotions and using them (e.g. “take 3 deep breaths”)</td>
</tr>
<tr>
<td>Skill</td>
<td>Identifying feelings and emotions (in yourself and others)</td>
<td>Skills for feelings</td>
<td>Observing changes in own or other's facial or body expression.</td>
</tr>
<tr>
<td>Skill</td>
<td>Expressing feeling and emotions</td>
<td>Skills for feelings</td>
<td>When, how and with whom to express feelings</td>
</tr>
<tr>
<td>Skill</td>
<td>Understanding social cues</td>
<td>Skills for feelings</td>
<td>Observing and monitoring interactions with others</td>
</tr>
<tr>
<td>Skill</td>
<td>Showing concerns for other's feelings</td>
<td>Skills for feelings</td>
<td>When and how to show concerns for others' feelings</td>
</tr>
<tr>
<td>Skill</td>
<td>Dealing with stress</td>
<td>Skills for feelings</td>
<td>Identifying stress, finding strategies and taking actions to decrease stress</td>
</tr>
<tr>
<td>Skill</td>
<td>Dealing with anxiety</td>
<td>Skills for feelings</td>
<td>Identifying anxiety, finding strategies and taking actions to decrease anxiety</td>
</tr>
<tr>
<td>Skill</td>
<td>Dealing with your angry feelings</td>
<td>Skills for feelings</td>
<td>Identifying angry feelings, finding how and when to express or regulate anger</td>
</tr>
<tr>
<td>Skill</td>
<td>Dealing with another person’s angry feelings</td>
<td>Skills for feelings</td>
<td>Identify whether a person is angry, and finding how and when to deal with it</td>
</tr>
<tr>
<td>Skill</td>
<td>Dealing with</td>
<td>Skills for</td>
<td>Identifying why and whether you are being rejected and what to do when it happens</td>
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</tbody>
</table>
|-------|--------------|------------|---------------------------------------------------------------------------------
<p>|       | rejection    | feelings   | You ask your sister if he wants to play with you, but she says she doesn’t have time. First, acknowledge how you feel, find strategies to deal with the feeling (take a deep breath), express your feelings (tell your mum) and/or act on it (revise a little more). |
| Skill | Dealing with | Skills for | Identifying why and whether you are being left out and what to do when it happens |
|       | being left out | feelings   | You ask your sister if he wants to play with you, but she says she doesn’t have time. You can identify how you feel, find strategies to deal with the rejection (take a deep breath), take things into perspective and find something else to do. |
| Skill | Dealing with | Skills for | Identifying boredom and learning how to entertain yourself |
|       | boredom      | feelings   | You and your friends want to build a puzzle together. Where do you start? Who is in charge of what? What needs to be done? How will you do it? Discuss the goals and progresses with each other. |
| Skill | Setting goals and obtaining them | cooperation | Identifying and setting goals, planning and taking action to achieve them |
|       |             |            | You know your friend lied and you are unsure what to do. Identify what is upsetting you (lying is wrong) and decide what to do (tell someone, ask your friend why she lied etc). |
| Skill | Solving everyday problems | cooperation | Identifying problems and finding steps to solve them |
|       |             |            | You and your sisters want to bake cookies but can’t decide which recipe to use. Identify what the problem is (choosing a recipe you both like) and find strategies to solve it (make two batches). |
| Skill | Solving a problem as a group | cooperation | Identifying problems and finding steps to solve them in collaboration |
|       |             |            | The teacher is telling the classroom about how to play this new game. You have to pay attention (look at the teacher), take notes (physically or mentally), and follow the instructions steps by steps. |
| Skill | Following directions | cooperation | Listening to directions, planning the steps and acting on them |
|       |             |            | Your mum is telling you what the plan is for your brother’s birthday tomorrow. Listen to what your mum is saying, look into her eyes, avoid distraction and take notes (physically or mentally) of what needs to be done. |
| Skill | Paying attention (to what others are saying) | cooperation | Keeping quiet, listening and understanding what others say |
|       |             |            | Your friends asked you to play a game outside but you have to finish your homework before. Resist distraction (tell your friends you’ll play later), think about what you need to do and why (to have good grades) and do it. |
| Skill | Staying on task | cooperation | Identifying task and ignoring distraction |
|       |             |            | The teacher tells you you have to do this exercise. |
| Skill | Working | Skills for | Task perception, goal setting |
|       |             |            | The teacher tells you you have to do this exercise. |</p>
<table>
<thead>
<tr>
<th>Skill</th>
<th>Cooperation</th>
<th>Skills for cooperation</th>
<th>Game Dynamic</th>
<th>Rules for play</th>
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<tbody>
<tr>
<td></td>
<td>independently</td>
<td>cooperation</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<td></td>
<td></td>
<td>and planning, enacting, and adaptation</td>
<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
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<tr>
<td></td>
<td></td>
<td>Learning how to work together as a group</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
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<td>on your own</td>
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<td>Learn how to find resources in yourself and plan accordingly</td>
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<td>Skill</td>
<td>Taking turns</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<td></td>
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<td>Waiting for your turn before talking or acting</td>
<td>Shared Resources</td>
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<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
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<td></td>
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<td>Your mum is talking to your dad you want to her them something. You should be patient, not interrupting others and wait until someone has finished before it's your turn</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
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<td>Skill</td>
<td>Being a good sport</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<td>Learning how to accept defeat positively and motivating people</td>
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<td></td>
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<td>Your mum is finishing cleaning the house but you want to go to the movie now! Learning how to find patience when things don't work out the way you want (e.g. find distraction to help you wait)</td>
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<td>Skill</td>
<td>Being patient</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<td></td>
<td></td>
<td>Good things come to those who wait: delay of gratification, turn taking and building endurance</td>
<td>Shared Resources</td>
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<tr>
<td>Skill</td>
<td>Being assertive</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<td></td>
<td></td>
<td>Calmly standing up for your or other points of view</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<td></td>
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<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
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<tr>
<td></td>
<td></td>
<td>Your friend pressures you during a ball game Learning how to calm respond to stressful or frustrating situation</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
</tr>
<tr>
<td>Skill</td>
<td>Saying no</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<tr>
<td></td>
<td></td>
<td>Identifying when and how to say No</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<td></td>
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<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
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<tr>
<td></td>
<td></td>
<td>Your friend pressures you to lie to your parents so you can go to the movie. You should identify why you want to say no (you shouldn't lie), calmly say no and explain why</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
</tr>
<tr>
<td>Skill</td>
<td>Accepting no</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
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<td></td>
<td></td>
<td>Dealing with frustration from the No</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<td></td>
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<td></td>
<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
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<tr>
<td></td>
<td></td>
<td>Your sister says she doesn't want to play with you Think about why you were told no, identify how you feel, use strategies to calm down and move on</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
</tr>
<tr>
<td>Skill</td>
<td>Asking for help</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identifying when and why you need help, and learning who, when and how to ask</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<tr>
<td></td>
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<td></td>
<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Your friend is being bullied at school, and you want a teacher to come and stop it. You should identify the problem, think about who and how to ask for help</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
</tr>
<tr>
<td>Skill</td>
<td>Helping others</td>
<td>Skills for cooperation</td>
<td>Game Dynamic</td>
<td>Rules for play</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Identifying who, why and when someone needs help, and learning how and when to help</td>
<td>Shared Resources</td>
<td>The players, or some of the players, have at least potential access to the same resources.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Rules for play</td>
<td>The players who were involved in some way in reaching a goal in the game share the reward.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Your friend doesn't know how to solve this math problem You should identify the problem, think about whether your friend needs help and how to help if that's the case</td>
<td>Betrayal</td>
<td>The letdown of an explicit or implicit agreement with another agent</td>
</tr>
<tr>
<td>Game Dynamic</td>
<td>Rules for play</td>
<td>Description</td>
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<tr>
<td>Alliance</td>
<td></td>
<td>A group of players who have agreed to obey particular and specific rules of conduct towards each other and who, usually, also have a shared agenda.</td>
<td></td>
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</tr>
<tr>
<td>Collaborative Action</td>
<td>Rules for play</td>
<td>Compound actions that require several agents to perform specific individual actions for them to occur.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td>Rules for play</td>
<td>The natural human urge to grapple over resources or status, to win something by defeating or establishing superiority over others.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict</td>
<td>Rules for play</td>
<td>A disagreement or collision of two players, most commonly over resources, goals or actions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluffing</td>
<td>Rules for play</td>
<td>Players have a possibility to convey false information to other players in order to benefit from the situation.</td>
<td></td>
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</tr>
<tr>
<td>Player-decided rewards</td>
<td>Rules for play</td>
<td>That one or more player controls the process of distributing between several players the rewards for completing, or the penalties for failing, a goal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Dilema</td>
<td>Rules for play</td>
<td>Choices players need to make that either set their own individual gains against each others or against the gains of a social group they belong to.</td>
<td></td>
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</tr>
<tr>
<td>Roleplay</td>
<td>Rules for play</td>
<td>Gameplay where players take on the goals and behaviors of fictional agents.</td>
<td></td>
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</tr>
<tr>
<td>Transfer of Ownership</td>
<td>Rules for play</td>
<td>During play a player can transfer ownership of an item, action or ability to another player.</td>
<td></td>
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</tr>
<tr>
<td>Trading</td>
<td>Rules for play</td>
<td>Players exchange some kind of Resource, be it information, actions, or game elements, between each other or the game system.</td>
<td></td>
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<tr>
<td>Narrative</td>
<td>Rules for play</td>
<td>Games often build on the players unfolding an underlying story within the Game World.</td>
<td></td>
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</tr>
<tr>
<td>Role reversal</td>
<td>Rules for play</td>
<td>The shift between two different roles which are each others opposite.</td>
<td></td>
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</tr>
<tr>
<td>Mutual Goals</td>
<td>Rules for play</td>
<td>Goals that are shared between two or more players during play.</td>
<td></td>
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<tr>
<td>Team</td>
<td>Rules for play</td>
<td>Players in a group or a team coordinate their actions, abilities, and roles in order to reach a common goal.</td>
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<table>
<thead>
<tr>
<th>Teaching Method</th>
<th>Debriefing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Spiral</td>
<td></td>
<td>This activity allows pupils to personally reflect and communicate their thoughts, ideas and feelings in a creative way on a particular issue. Everyone in the group selects a free space on the spiral and draws something which represents their thoughts on a particular topic.</td>
</tr>
<tr>
<td>Back-to-back</td>
<td></td>
<td>Encourages working together and develops clarity in communication and active auditory skills. Pupils sit back-to-back (no cheating), one is given an image the other pencil and paper. The pupil with the image must provide instructions on how to draw it.</td>
</tr>
<tr>
<td>CAF (Consider All Factors)</td>
<td>Generalisation</td>
<td>Gets pupils to think about all relevant factors when making a decision or considering an idea. Discuss the important of considering all factors in decision making then split pupils into pairs/groups, ask to fill out the Consider All Factors worksheet (page # of the guide).</td>
</tr>
<tr>
<td>Teaching Method</td>
<td>Collage</td>
<td>Generalisation</td>
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<td></td>
<td>Encourages pupils not only to communicate effectively but to develop their interpretation skills of other people's work. Each group is given a word, idea or issue which they must represent using a range of materials such as newspapers, felt-tips, scissors and glue.</td>
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<thead>
<tr>
<th>Teaching Method</th>
<th>Consequence Wheel</th>
<th>Generalisation</th>
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<tbody>
<tr>
<td></td>
<td>Encourages pupils to think about the direct and second order consequences of a particular event or action. Pupils write the main event in the centre of the circle, they then write direct consequences of the event and make a connection between the two.</td>
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<tr>
<th>Teaching Method</th>
<th>Fist-to-Five</th>
<th>Debrief / Preperation</th>
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<tbody>
<tr>
<td></td>
<td>Encourages pupils to determine how confident they feel that they've achieved what was expected by the end of a lesson. Ask pupils to show their confidence by putting out either; Full hand (great success), Three fingers (partial success) or fist (no success).</td>
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<tr>
<th>Teaching Method</th>
<th>Five Questions</th>
<th>Debrief / Preperation</th>
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<tbody>
<tr>
<td></td>
<td>An information gathering activity which gives pupils the opportunity to unpack complicated topics. A question is posed to pupils using 'How' or 'Why', the same question word is used to explore the idea. It stops when the idea has been explored fully.</td>
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<tr>
<th>Teaching Method</th>
<th>Hot Air Balloon</th>
<th>Preperation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Encourages pupils to confront an issue and explore its implications further. Ask pupils to list who needs to be in the balloon in order for it to take off. What outcomes are needed for the project to be successful what potential failures could there be?</td>
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<thead>
<tr>
<th>Teaching Method</th>
<th>KWL (Know – Want to know – Learned)</th>
<th>Debrief / Preperation</th>
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<tbody>
<tr>
<td></td>
<td>This activity builds upon prior knowledge and develops teamwork skills. On a K-W-L grid (see below), before the lesson pupils write under 'K' what they think they already know about a particular topic, then fill out the 'W'. At the end they return and fill out the 'L'.</td>
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<tr>
<th>Teaching Method</th>
<th>Mind Movies</th>
<th>Preperation</th>
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<tr>
<td></td>
<td>Encourages pupils to engage in discussion about a particular issue and share ideas. Pupils close their eyes and the facilitator reads a short story. Pupils then are asked to continue the story in their mind, then come together to discuss their possible outcomes.</td>
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<tr>
<th>Teaching Method</th>
<th>OPV (Other People’s Views)</th>
<th>Generalisation</th>
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<td></td>
<td>Encourages pupils to view the other person's point of view on a particular issue or topic. Pupils think about how sharing opinions can help to gain new perspectives on factors, consequences and objectives that underpin the issue in question.</td>
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<tr>
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<th>Revolving Circle</th>
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<td>Builds confidence in communication. Divide pupils into two groups; one forms the inner circle the other the outer. Pairs exchange views on an issue for a minute then the inner circle rotates, repeat this until pupils have spoken with a wide range of partners.</td>
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<thead>
<tr>
<th>Teaching Method</th>
<th>Snowballing</th>
<th>Debrief</th>
</tr>
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<tbody>
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<td></td>
<td>Enables pupils to think about their own responses to issues and consider other points of view. A question is posed or scenario described. Pupils individually write down their thoughts then compare with their partner, discussing positions which must result in a compromise.</td>
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<th>Teaching Method</th>
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<th>Debrief</th>
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<td></td>
<td>Encourages pupils to indicate how well they achieved what was expected by the end of a lesson or session. Pupils are given set of three cards - 1 green circle (very confident), 1 amber (partial success) and 1 red. Ask pupils to show how confident about the topic they are.</td>
<td></td>
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