HOW TO ENCOURAGE INFORMAL DEBRIEFING?
A step further on changing attitudes with games.

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How to encourage informal debriefing?
A step further towards changing attitudes with games

Submitted by Daniela Harmsen Rivera to the University of Skövde as a dissertation towards the degree of M.Sc. by examination and dissertation in the School of Humanities and Informatics. The project has been supervised by Per Backlund.

2011-06-06
I hereby certify that all material in this dissertation which is not my own work has been identified and that no work is included for which a degree has already been conferred on me.

Signature: ________________________________________________
How to encourage informal debriefing?

A step further towards changing attitudes with games

by Daniela Harmsen

Abstract

Debriefing is a crucial part of serious games, as it helps the players fully understand the relations between the game and real-life. This allows them to generalize what has been learned so they can use the gained knowledge when it is needed. There are also many things that can be learned with serious games: skills, facts, procedures, etc. In this thesis the focus is on changing attitudes with serious games, and how to better achieve this by making people talk about it and act on it. A change of attitude is usually achieved through the complement of game and debriefing, but this study takes it a step forward, proposing a method to further motivate the instance of informal debriefing, where the participants form a stronger opinion on the matter and decide to act on it. This instance is rarely planned, since it could take more time and resources, thus the clients are not willing to invest. The present thesis proposes a way to achieve informal debriefing. A Global Framework was developed as a result of the analysis of existing theory. The framework utilizes persuasion principles that support attitude and behaviour change and is structured as a guiding process to be followed. The conceived framework was polished while being applied to a case.

Key words: Serious games, debriefing, attitude change, behaviour change, and persuasion.
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1 Introduction

The possibility to change people’s attitudes is definitely something that could interest many people: From governments trying to achieve social change, to entities that support people in giving up smoking or other unhealthy habits, to companies wanting to better place their brands in their clients’ minds. One way to achieve this could be by means of serious games. In other words, by using games that are designed not only to be entertaining but also to serve a secondary “serious goal”, which can be teaching, training, therapy, or in this case attitude change.

On a personal scale, I am very interested in the possibility to use the results of this thesis on designing games that can help people, for example in implementing effective games for social change. Contacts with a developer of serious games revealed that there is a need to address the issue of informal debriefing in order to enhance the persuasive power of serious games. For this reason, I have concentrated my efforts on the post-game debriefing because it is an essential instance in understanding and learning from a gaming experience (Crookall, 2011). Debriefing is the process that allows the participant to reflect upon the game experience, make connections and derive meaningful insights from the experience (Thiagarajan, 1992) and I am convinced that there are still things to be done to render it more effective. My research is meant to contribute to the field of Serious Games by proposing a method that complements usual debriefing techniques to better attain attitude change. Some articles on pedagogy, persuasion techniques and cognitive science have been studied, but the aim is not to elaborate on those fields, since a complete review and full understanding of these domains would be too extensive. The most influential research utilized in this study comes from many sources. In the field of attitude change, the work of Williams and Williams (2007, 2010) is referred to, namely, the Multiple Identification Theory. In their research, they have developed and improved a theory that explains the attitude change process within games and enumerates a list of factors that help with this purpose. On the persuasion domain, several articles by Oinas-Kukkonen have been used. The Persuasion Systems Design model (PSD model) by Oinas-Kukkonen and Harjumaa (2008a, 2008b) is one of the most referred in this thesis. Here, the authors propose 28 principles that can be used in systems to achieve persuasion. The principles are explained and exemplified. Several articles on debriefing have also been included, such as the chapter by Pearson and Smith in the book: “Reflexion: turning experience into learning” and many others, mainly found on the Simulation & Gaming journal. The final goal of this project is to propose a framework for the creation of a system that supports informal debriefing of serious games in leading the users to action, which will ensure deeper attitude change.

After a thorough analysis of the mentioned theories, this thesis results in the development of a Global Framework that utilizes persuasive principles to support attitude and behaviour change. The framework is structured in steps to be an aid that can help in the design of a system to be used after debriefing. The suggested process is then tested, by applying it to an empirical case. As a result, two concepts are proposed to the collaborating serious game company that provided their game as the object of the case. Both are possible support systems that follow the framework guidelines. The company evaluates the ideas on a first
instance and comments on their potential. This thesis, thus, proposes a theoretical framework and tests its functionality by applying it to a practical case.
2 Background

2.1 Attitude change

Serious games, when designed with care can be effective tools for spreading knowledge. They are not in all cases better than regular pedagogy on their teaching power, but as Petranek, Corey and Black (1992) discovered through an extensive literature review, they have a significant advantage over traditional methods when it comes to changing attitudes because they attract more effectively the students’ attention.

In a search for attitude changing principles in games, the theory that is most recurrent is the Multiple Identification Theory by Williams and Williams (2007, 2010). This theory has evolved throughout the years. In the beginning, around the 1980’s, it started as the Identification Theory. At that time, the older of the two Williams, along with his colleagues, thought that identification of the user with the game character was the key aspect towards attitude change. Over the years, however, he has realized that there are other factors that affect attitude change through games (Williams & Williams, 2007).

<table>
<thead>
<tr>
<th>Aspects of Identification</th>
<th>Affective Identification</th>
<th>Cognitive Identification</th>
<th>Behavioral Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of identification</td>
<td>Players are emotionally involved or “identified” with the game’s outcome.</td>
<td>Players “identify” the simulation with reality and see its principles as valid in real life. The game has “believability.”</td>
<td>Players “identify” the lessons of the game as learnings that have been personally lived, accepted, and/or chosen.</td>
</tr>
<tr>
<td>Conditions within the simulation experience facilitating each kind of identification</td>
<td>1. Strong incentives for winning</td>
<td>1. Game structure matches reality</td>
<td>1. Freedom to create and execute a personal strategy and receive feedback</td>
</tr>
<tr>
<td></td>
<td>2. Game director makes players aware of match between game structure and reality</td>
<td>2. Replay game</td>
<td></td>
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<td></td>
<td>3. Postgame debriefing</td>
<td>3. Postgame debriefing</td>
<td></td>
</tr>
<tr>
<td>Indicators of attitude change</td>
<td>Emotional investment in game results</td>
<td>Develop new schemes or beliefs; intellectual change</td>
<td>Develop personal commitment to new behaviors; transfer game’s lessons to other settings</td>
</tr>
<tr>
<td></td>
<td>Affective indicator of attitude change</td>
<td>Cognitive indicator of attitude change</td>
<td>Behavioral indicator of attitude change</td>
</tr>
</tbody>
</table>

Table 1  By Williams and Williams (2010, pp. 190). Summary of MIT as a model for Simulation Design to Promote Attitude Change.
In their recent work, Williams and Williams (2007, 2010) have proposed that users identify with the game in three levels before they can reach attitude change. When analyzing Table 1, by Williams and Williams (2010), we can see that on a first instance the players get involved with the game and its outcome in an emotional way. They start to feel that it is something important to them. As Gee (2008) exemplifies it, the player thinks: ‘my army was crushed’ instead of ‘the army in the game was crushed’. This is called Affective Identification and it is harnessed by offering strong incentives to the player. Cognitive Identification follows in the process. The players start relating the game with what happens in the real world, thus connecting their actions and outcomes in the game with those on their everyday lives. All of this is supported by making sure that the game is believable and matches the real situation, which can be further substantiated by a game director or debriefing facilitator who helps the participants make the connections. In this stage as well as the next one, debriefing is very important. With the last step, Behavioural Identification, the player will successfully achieve attitude change. For this final instance to occur, the game must provide players with enough freedom to try out their own strategies and give them feedback accordingly. That allows the participant to transfer these strategies to real life. In this process, replaying the game is recommended as well as a proper debriefing after the playing sessions.

2.2 Debriefing
Debriefing has been largely discussed along the last years and its definition has been worded in many ways. A very simple and clear way of describing it is as “an instructional process that is used after a game, simulation, roleplay, or some other experiential activity for helping participants reflect on their earlier experiences to derive meaningful insights” (Thiagarajan, 1992, pp.161). It must be clarified that some researchers talk also about a debriefing that is used during the game or simulation (Crookall, 2011; Peters & Vissers, 2004), in between stages. This helps the facilitator make a balance of the recent experiences and/or point out issues that will be useful for the next section of the game or simulation. In any case, debriefing always leads the participants to dialogue and careful consideration.

As we can see, a discussing instance is critical, since it is then that one can make sense of what they just did. And this doesn’t only happen in games, but in many aspects of our life. Humans tend to debrief their actions with the people that surround them all the time (Crookall, 2011). If something extraordinary happens, a person feels the urge to tell this to a friend. If they are not sure about a decision, if they don’t understand something or if they need different views on what they have recently experienced, people will go and talk to someone else about it. It is this shared reflection after the occurrence that lets humans process the event and fully understand what happened and what this means to them. Now, when it comes to learning with games or simulations the same is true. Many agree that debriefing presents the learners with the possibility to reflect upon what they experienced during the game (Crookall 2011; Pearson & Smith, 1985; Petranek, Corey & Black, 1992; Steinwachs, 1992) and discover together with the rest of the participants the meaning of it all (Steinwachs, 1992).

Therefore I support Crookall (2011) when he says, “debriefing is essential”, because after a learning experience, “participants who can reflect on the game are in a better position to recognize what they learned in the game” (Petranek, Corey & Black, 1992, pp. 177).
2.2.1 Formal and informal debriefing
With the information above we know that attitudes can be changed by games, with the aid of debriefing, but it doesn’t stop there. Pearson and Smith (1985) go deeper into debriefing types, stating that there are two kinds of debriefing: Formal and Informal. The former is a planned instance where participants reflect together upon the game experience, while the latter “is that which occurs individually or with others after formal debriefing” (pp.71). Many articles have been written about the pre-arranged kind of debriefing and how to facilitate it, but not much has been studied referring to informal debriefing. For example, Petranek, Corey & Black (1992) propose that journal writing is the key to motivate this instance, but even the authors admit that there can be some flaws in this option (i.e. the fact that it takes a lot of time for the students, in this case, to write the journals, and for the teachers to correct them). It presents a good alternative for individual thinking as well as for communicating ideas to the teacher, but unfortunately it lacks the interaction among peers.

2.3 Persuasive systems
Going back to the idea of changing attitudes I quote Oinas-Kukkonen and Harjumaa (2008a, pp. 200) when they state: “A key element in attitude change is persuasion which is an attempt to change attitudes or behaviours or both (without using coercion or deception).” Oinas-Kukkonen has worked on Persuasion with different colleagues throughout the years. In 2008 Oinas-Kukkonen analyzed with his fellow researcher, Harjumaa, the key approaches to human-computer persuasion, and later that same year these two academics published a framework with 28 principles that can help design and evaluate Persuasive Systems and called it Persuasive Systems Design model, also known as PSD model.

They divide the 28 principles on 4 categories, which help support different areas in persuasion. Four tables by Oinas-Kukkonen and Harjumaa (2008a, 2009) can be found in Appendix 1. The first chart presents the Primary Task support, which helps users complete the basic actions the system requires from them (e.g. reduction simplifies complex behaviour into more basic tasks). Dialogue support then aids the human-computer interaction, allowing the user to go further with the task at hand (e.g. reminders hint the user on the right time to take action). System credibility support reinforces people’s trust on the system, making users more likely to be persuaded (e.g. trustworthiness ensures that the information presented to the user is correct and un-biased). And finally, Social support uses social influence as a motivator (e.g. social comparison lets participants contrast their performance with that of other users).

2.3.1 In combination with a cognitive model
In 2010, Räisänen, Lehto and Oinas-Kukkonen used the PSD model to evaluate persuasion in a real case. They confirmed that the model works for guiding persuasive system design and suggest that for utilization in research studies and projects it should be used along with cognitive or behavioural theories. They display a diagram of how this would function along with the Elaboration Likelihood Model (ELM). In Figure 1 their diagram of the ELM is presented and augmented with indications on how the PSD model categories can work by following the ELM theory.

According to Räisänen et. al. (2010), if we follow the ELM logic a human being can be convinced either by a direct or an indirect route. The inner loop with blue arrows, shown in
Figure 1, depicts the latter. This route uses indirect cues (i.e. attractive message source) to convince the interlocutor. Unfortunately, this method though easier, doesn’t achieve a strong effect in persuasion, but only results on an attitude shift. On the other hand, the biggest loop in Figure 1 represents the direct route which is the hardest and longest to attain, but leads to a better result: a direct attitude change. For this, one must first motivate the users and improve their ability so they can ultimately process the information, which results in direct attitude change.

![Figure 1 Diagram integrating how PSD principles support the ELM according to Räisänen et. al. (2010) to their original chart (Räisänen et. al., 2010, pp. 190). The outer loop leads to attitude change, while the inner loop only attains an attitude shift on the user.](image)

If we follow Räisänen et. al. (2010) further on their line of thought, the PSD principles can assist the different steps that lead to persuasion. Dialogue support, for example, is a tool that magnifies persuasive communication. Social support can then be a motivation for the users to go ahead with the process. The persuadee needs to be able to understand the message that is why primary task support comes into play to give the user the necessary tools and make it simpler. Finally the message must be cognitively processed, which
according to Räisänen et al. (2010) is not supported by the PDS principles. Finally Credibility support helps only indirect attitude shift. Thus, if criteria are used from all the different kinds of support included in the PSD model, the user could be persuaded both directly and indirectly. In my opinion, some of the principles on Credibility support (i.e. trustworthiness and surface credibility) should always be present in persuasive systems, since they are the face of the persuader in the eyes of the user and they must inspire trust from the user.

2.4 Behaviour change
The final element used in this thesis is Fogg’s Behavioural Model or FBM (Fogg, 2009). It is true that the ultimate aim of this thesis is to change people’s attitudes, but for a definite attitude to take place, behaviour change must occur as well. According to the research by Oinas-Kukkonen and Harjumaa (2008a, 2008b) the persuadee first yields to the new attitude, but it is only when they take action, that they can be truly and effectively persuaded. Therefore, behavioural change is also important to achieve the final thesis goal and must be studied. With that purpose I introduce Fogg’s Behavioural Model (FBM) as a way to discern key principles out of the PSD principle list.

![Figure 2: Fogg’s Behavioural Model or FBM (Fogg, 2009, pp. 5)](image-url)
Fogg’s model (Figure 2), presented during the PERSUASIVE 2009 conference, states that “behavior is a product of three factors: motivation, ability, and triggers” (Fogg, 2009, pp.1). The right amount of the first two has to be present if the trigger is to be successful in producing the intended result. Fogg (2009) states that usually persuasive technologies in order to be effective try to either motivate users, or increase their ability by making things simpler for them. In some cases, he says, they use both motivation and ability aids. But, what they usually forget to properly include, according to Fogg (2009), is the trigger factor.

Each of these elements can be divided in subcategories, as we see in Figure 2. Core Motivators will urge people to be persuaded either using a positive feeling as a goal (i.e. hope) or a negative feeling that the user wants to avoid (i.e. fear) when yielding to the action proposed by the persuader. To increase the ability of the user, one should make sure not to wear out the Simplicity Factors. For example, usually people value time, so a persuader must make sure that the behaviour required doesn’t take too much time. Brain cycles refer to hard thinking and social deviance at the fact that some people won’t deviate from expected social conducts. To know which Simplicity Factors one can stretch, one must know their target user. Finally, once the user has enough motivation and ability as to be over the Behaviour Activation Threshold (Figure 3), the persuadee only needs a trigger to remind him or her that it is time for action. In Figure 2 we can appreciate 3 kinds of triggers. Sparks, work together with a motivational factor in order to cause behaviour (e.g. an advertisement piece that inspires hope). A facilitator aids the user in simplifying the behaviour required from the user (e.g. to buy this, you only need one click). Finally the signals are meant to be used when there is already enough motivation and ability, and the persuadee only needs a reminder of the target behaviour to act.

![Figure 3](image.png)  
*Figure 3*  
3 Problem
To recapitulate (Figure 4), the problem at hand starts with the question: How to achieve attitude change with the use of serious games? This leads the dialogue to the fact that in serious games not only the design of the game is essential, but also a good debriefing must be structured in order to help the game participants reflect on the gaming experience (Crookall 2011; Pearson & Smith, 1985; Petranek, Corey & Black, 1992; Steinwachs, 1992) and thus stimulate them to change their minds on a certain matter. It is then that informal debriefing comes to play as a means to get the reflection going on for even a longer period, which can reinforce attitude change. After all, we should never forget that “the products of informal debriefing may be just as important and powerful as those of formal debriefing” (Pearson & Smith, 1985, pp.71). But how does this informal debriefing occur? Pearson and Smith (1985) recommend that the formal debriefing should never answer all questions; it should instead leave some ideas in the air, so people can keep thinking of the possibilities. And then I add, why not give them a tool that facilitates the process, a platform that allows them to keep in touch with other participants and discuss their ideas to reaffirm their thoughts? In addition, the same product could give them links that propitiate action, in other words: behaviour change. But why should we aim for the users taking action on their new attitude? If we analyze some of the statements by Oinas-Kukkonen & Harjumaa, (2008b) referring to persuasive systems, we can see that: “In order for a person to be persuaded information must be presented, and the persuadee must pay attention to the argument(s) presented and comprehend it” (pp. 168). This is accomplished via the game and debriefing resulting in attitude change: “After this the persuadee often yields to the position presented and retains (at least for some time), but in a successful persuasion the persuadee takes action to comply with the new position.” (Oinas-Kukkonen & Harjumaa, 2008b, pp. 168) This means that they will only be fully convinced of their new opinion, when they have done something about it. That is why my project translates into a system that will support this behavioural change.

In short, this thesis aims at creating a framework that supports informal debriefing leading to behaviour change in the context of serious games. The aim will be reached by the following objectives:

- Conduct a survey of literature concerning serious game debriefing, attitude change, behaviour change and persuasion.

- Synthesize the identified theories into a framework intended to guide the creation of a system that motivates informal debriefing after a serious game, while supporting behaviour and attitude change.

- Propose a system for an existing attitude-changing serious game, based on the developed framework.

- Validate the suggested system with the creator of the game.
Figure 4  Thesis Concept.

3.1 Method
An extensive literature search has been conducted, mainly using the SAGE journals online database, ACM portal, IEEE Xplore and Libhub, which is a journal search database from the University of Skövde, among others. From the selected articles, core studies have been determined and explained on the background section. In the following chapter, in an attempt to reduce the extensive 28-principle list proposed on the PSD model by Oinas-Kukkonen and Harjumaa (2008a), I will cross-reference this list of persuasion principles with elements that support attitude change (MIT) and behaviour change (FBM) according to each
studied theory. This will produce a trimmed list of persuasion principles specifically intended to change attitude and behaviour.

However, since the idea is to propose a framework that supports debriefing, I think it is important to consider the shortcomings that exist in current debriefings. Hence, those found in literature will be discussed as well as possible solutions for these shortcomings. The consequent list will then be cross-referenced with the previous trimmed list of attitude changing principals. The outcome will be a final Framework Principle List, which includes all the relevant elements.

Finally, the framework is meant to be used as a guide that can allow designers to develop a system. That is why I think it is critical to put the framework into perspective. To achieve this, the principles in the list will be organized on a logical order that follows suggested design steps to building such a system. The result is called Global Framework.

Once this Global Framework is finished, it will be applied to support an existing serious game. Here, ideas will be proposed to the designer of the selected game. The concepts will be based on the Global Framework's principles and they will be created following the suggested design steps. This is a case, where the client (i.e. the designer of the game) will validate the proposed design following a series of meetings to better shape the system.
4 Building the global framework

4.1 Persuasive principles for attitude change
As Räisänen et. al. (2010) suggested, the principles on the PSD model are several, and not all of them work well together. In designing a persuasive model, they recommend to select the principles with more synergy and pertinent to the objective. Therefore, the 28-principle list must be reduced to the propositions that better serve the attitude change objective. For this reason, the persuasion principles are contrasted with the MIT list of elements that help attitude change according to Williams and Williams (2010). Also, Oinas-Kukkonen and Harjumaa (2008a) argue that even if attitude change can be retained for a while, the only way to complete the cycle is to change behaviour as well. That is why the PSD model is also cross-referenced with Fogg’s Behavioural Model (Fogg, 2009), following the advice of Räisänen et. al. (2010). The results of this can be observed in Table 2. In green, the most important elements are highlighted. Since our main aim is Attitude Change, the elements of the PSD model that aid this cause have been selected as well as the PSD principles that could support the elements necessary for behaviour change according to Fogg (2009). The principles highlighted in light green are aspects that should be taken into account for the analyzed case (Chapter 5) specifically. Since this is a game for students social learning is important, and Cooperation and competition are lessons from the game itself, so they should be further propelled by the system.

4.2 Helping improve shortcomings in current debriefing
Since the Global Framework aims to complement formal debriefing by ensuring behaviour change and thus better retention of attitude change, I think it is a good idea to take the opportunity and solve some shortcomings that the current formal debriefing techniques present in the studied literature. For this, I will state the main issues that I have found in debriefing while analyzing previous work.

4.2.1 Shortcomings found in literature
Time: Often, the debriefing is cut short because the activity takes longer than planned, or simply because the client dismisses it as less important and doesn’t give it the required time for it to be effective (Pearson & Smith, 1985). This usually happens when the client or user is the one who appoints the debriefing facilitator, which results in facilitators that don’t know how the game really works.

The facilitator: It is not always the same person who directs the game and subsequent debriefing. This is not necessarily a problem, but “if the debriefing facilitator also acted as a facilitator in the playing stage of the simulation game, he or she may have been able to make concrete observations, which allow issues to be raised that are not brought up by participants themselves.” (Peters & Vissers, 2004, pp. 81) It should be said, though, that a facilitator is not always needed, as Steinwachs (1992) mentions on her study.

Rewards: Williams and Williams (2007, 2010) suggest that there should be significant incentives for the potential winners so that affective identification can take place. But, this is not always the case.
### Table 2  Cross-reference data between Fogg's behaviour model, PSD principles for persuasion and MIT elements for attitude change.

**Motivation:** Due to lack of rewards, or to the dryness of the matter at hand, there can be a lack of motivation among students to continue with the reflection on the subject. On this
note, Thiagarajan (1992) proposes some debriefing games that could bring back enthusiasm and excitement for the players. He attributes this motivation to the fact that these games give the players part of the control over the outcome.

Connections to real life options: Williams and Williams (2007) also state that players must “see a correspondence between their situation (resources, conditions, etc.) in the game and that of the ‘real-life’ character or group.” (pp.455). This could be achieved with in-game debriefing. But, if we go even further and consider what Oinas-Kukkonen and Harjumaa (2008b) say about action being the true sign of effective persuasion, we could say that real life options are seldom included in descriptions of debriefing techniques. Some methods will have the participants talk about possible courses of action, but none of studied ones specifies that a list of concrete options should be provided to the people being debriefed.

Finally, Petranek, Corey and Black (1992, pp. 178 - 179) enumerate a series of assumptions people make about oral formal debriefing:

1. Because something is explained and discussed, all understand equally.
2. All students expose all their ideas on the matter during the debriefing.
3. Learning is fully explored and well measured.
4. The debriefing encourages self-reflection and gives them mechanisms that assist them in connecting the experience with the things they must learn.

4.2.2 How to solve these shortcomings

All these shortcomings should be accounted for on a proposal of an extra debriefing session, since that is what is lacking nowadays in debriefings. Following, is a list of design elements proposed to overcome the above-mentioned problems:

Time flexible: The system proposed should be available to the users at any time. In this way, they can take all the time they want to keep reflecting on the issues treated during the serious game.

Chance for the game facilitator to share input from the game experience: Since the facilitator of the game is not always the one present during the game. There should be a platform where he/she can share their input from the game with the participants, to make sure all relevant issues are discussed.

List of concrete actions: The proposal should include a way to connect the users with real actions that they can take, favouring the behaviour and attitude change.

Opportunity to understand everything better: The design proposed should provide for an option to better understand the matter at hand. This can be achieved, for example, by linking them to more information.

Place to present own ideas: Since the purpose is that of discussion, an instance should be offered where users can input new ideas and even discuss them further with peers.
**Learning is well measured:** All interactions of the user and the proposed solution should provide a better summary of participants’ real learning.

**Encourage self-reflection:** To make more connections and believe more on the new attitude.

### 4.2.3 Adding features to the “principle list”

<table>
<thead>
<tr>
<th>Problems with current debriefing</th>
<th>PSD model (Ol纳斯-Kukkanen &amp; Harjumaa, 2009)</th>
<th>Proposed solutions for debriefing shortcomings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not necessarily all participants understand all that was explained and discussed</td>
<td>Reduction (simple tasks)</td>
<td>Give all people a chance to understand all. (Info explained better + links to more info)</td>
</tr>
<tr>
<td>Learning is not well measured</td>
<td>Tailoring (4 user group)</td>
<td>Measure learning</td>
</tr>
<tr>
<td>Might not urge self-reflexion and making connections</td>
<td>Self-monitoring (track own performance)</td>
<td>Encourage self-reflexion and making connections</td>
</tr>
<tr>
<td></td>
<td>Simulation (observe cause-effect)</td>
<td></td>
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<tr>
<td></td>
<td>Rehearsal (target behavior)</td>
<td></td>
</tr>
<tr>
<td>Dialogue support</td>
<td>Helps persuasive communication (Räslän et al., 2010)</td>
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</tr>
<tr>
<td>No significant incentives</td>
<td>Not enough Motivation</td>
<td></td>
</tr>
<tr>
<td>Praise (positive feedback; sms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rewards (e.g. upgrade avatar)</td>
<td>Significant incentives</td>
<td>Enough Motivation</td>
</tr>
<tr>
<td>Reminders</td>
<td>Suggestions (at the right time)</td>
<td>List of concrete actions</td>
</tr>
<tr>
<td>No list of concrete actions</td>
<td>System credibility support</td>
<td>Helps with indirect attitude shift (Räslän et al., 2010)</td>
</tr>
<tr>
<td>Trustworthiness (correct info, unbiased)</td>
<td>Surface credibility (Competent look and feel)</td>
<td></td>
</tr>
<tr>
<td>Social support</td>
<td>Helps with indirect attitude shift (Räslän et al., 2010)</td>
<td></td>
</tr>
<tr>
<td>Facilitator on game doesn’t share input on debriefing</td>
<td>Not enough motivation</td>
<td></td>
</tr>
<tr>
<td>Social comparison (with other users)</td>
<td>Normative influence (gather people with same goals, e.g. challenge friend)</td>
<td></td>
</tr>
<tr>
<td>Not all players can present all their ideas on the issue</td>
<td>Arena for game facilitator to share input with participants</td>
<td>Arena for users to present all their ideas on the issue</td>
</tr>
<tr>
<td>Recognition (ex. quitter of month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enough time for reflection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Cross-referenced data selected persuasion principles and problems and suggested solutions in current debriefing processes.
The reviewed shortcomings and solutions are compared in Table 3, with the Principle list for the Global Framework. In the table it is evident that most of the shortcomings can be fixed, by using the Framework principles. Time is the only shortcoming that doesn’t relate to the PSD list. This is not a great concern, since I believe that this issue will be properly addressed when choosing the technology. Thus, it is imperative that the platform selected for the system, is a technology available for users at all times (e.g. an internet based application).

4.3 The aim of each principle in persuading
Now that all the principles have been definitely selected, it is time to take a look at the Elaboration Likelihood Model again and how the elements on the final list interact within the model (Figure 5). Here, the different kinds of supports that PSD model offers (i.e. Primary task, dialogue, credibility and social) have been replaced by the principles chosen in each category. This will be useful when deciding how to apply each principle; since it presents a better idea of the role that each one plays in attitude and behaviour changing persuasion.

![Figure 5](image)

Figure 5  Selected persuasive principles and how they work within the ELM

In Figure 5, I have used the term “cause-effect” to replace its previous name “simulation”, because the replaced term could be misinterpreted. According to the creators of the PSD
model, simulation stands for a system that “can persuade by enabling them [the user] to observe immediately the link between the cause and its effect” (Oinas-Kukkonen & Harjumaa, 2008b, pp. 170), and as an example of this, they suggest: “Before and after pictures of people who have lost weight are presented on a Web site” (Oinas-Kukkonen & Harjumaa, 2008b, pp. 170). As it can be noted, they refer to an element that shows the user the cause-effect of a given problem and not necessarily a simulation as people on the serious games field would see it (i.e. a planned instance that imitates a given situation, letting the participants experience it as if was real).

4.4 Global Framework

After all the previous analysis a list of prerequisite principles has been defined (Table 2), then some necessary characteristics that will solve current debriefing problems have been established within the principles (Table 3). And finally, the principles have been combined with ELM (Figure 5) as suggested by Räisänen et. al. (2010) in an effort to understand the role that each one of them plays in persuasion.

The persuasive principle list for the Global Framework now consists of 14 principles, which is a lot to grasp in one instance. That is why, first of all, I am coupling certain principles together (i.e. praise with rewards, cause-effect with rehearsal) since I consider that in each couple of principles either of those could be used with the same effect, thus the designer can use only one if he or she decides so. I am also dividing the principle list into logical steps toward its translation to a specific system. The result of this reduction and rearrangement into a process will be the final Global Framework.

4.4.1 Defining steps to follow

In their work for the PERSUASIVE 2009 conference, Tørning and Oinas-Kukkonen (2009) write a state of the art of Persuasive System Design. There, they develop a chart based on the research by Oinas-Kukkonen and Harjumaa (2009), which synthesizes very well the research of the latter pair.

When designing a persuasive system, the first thing to define is the User Context (Oinas-Kukkonen & Harjumaa, 2009; Tørning & Oinas-Kukkonen, 2009). In Table 4, the core elements of this context are shown. According to the study by Oinas-Kukkonen and Harjumaa (2009): First, one must know the Intent of persuasion, that is to say the persuader and which kind of change (i.e. change type) they are aiming for. This gives the system designer a main goal to follow with his or her product.

Next comes the Event. Here, the designer must know the user context (Oinas-Kukkonen & Harjumaa, 2009), which is key to an effective persuasion. The target user should be analyzed as deeply as possible, for the designer to be aware of their interests, pre-existing attitudes, life-style and everything else that can be utilized as means to better persuasion (Oinas-Kukkonen & Harjumaa, 2009). With this information the tailoring principle is put into action, by designing a system where the user will feel identified by it and where he or she can find relevant goals or propose their own. Subsequently, the use context must be looked into. That is to say, “the features arising from the problem domain” (Oinas-Kukkonen & Harjumaa, 2009, pp. 490). For instance, in a case of addiction, the user has been exposed to this conduct for such a long and persistent time, that the system here should aim at
reinforcing positive attitudes and making the user resistant to counter-persuasion, even in hard situations (Oinas-Kukkonen & Harjumaa, 2009). The technology context must also be defined in a way that supports the principles, in the case of this thesis, technology should specially reinforce the fact that the system should be available for the user at any time.

Finally, the Strategy is about deciding how to persuade the user. For instance, determine if the message will be presented as text, images, a game, etc (Oinas-Kukkonen & Harjumaa, 2009). And which route will be taken to persuade the user (Oinas-Kukkonen & Harjumaa, 2009). Will it be a direct route of persuasion? Is it an indirect route? Or both? For the Global Framework I have chosen both principles that will support the direct and indirect routes.

### Table 4

<table>
<thead>
<tr>
<th>The Intent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. Persuader</td>
<td></td>
</tr>
<tr>
<td>C2. Change type</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Event</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C3. Use context</td>
<td></td>
</tr>
<tr>
<td>C4. User context</td>
<td></td>
</tr>
<tr>
<td>C5. Technology context</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Strategy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C6. Message</td>
<td></td>
</tr>
<tr>
<td>C7. Route</td>
<td></td>
</tr>
</tbody>
</table>

**Table 4** Persuasive Context represented by Tørning and Oinas-Kukkonen (2009) according to research by Oinas-Kukkonen and Harjumaa (2009)

Finally, the Strategy is about deciding how to persuade the user. For instance, determine if the message will be presented as text, images, a game, etc (Oinas-Kukkonen & Harjumaa, 2009). And which route will be taken to persuade the user (Oinas-Kukkonen & Harjumaa, 2009). Will it be a direct route of persuasion? Is it an indirect route? Or both? For the Global Framework I have chosen both principles that will support the direct and indirect routes.

#### 4.4.2 Final Global Framework

I have related all the previous with the final list of principles, and added a few steps to further clarify the framework. Table 5 shows the result that I call Global Framework and it describes the steps that one should follow when adapting it to a real case. Horizontal lines separate the table in the various steps. The grey boxes present important elements that must be considered when designing the system. All possible information concerning these issues must be collected in order to take the best design decisions. The boxes in blue are the selected persuasion principles for attitude and behaviour change. They have been located next to the project elements that they convey. For instance on step 2, once I know all about the user, I will be able to tailor the system to the user’s interests, preferences, goals, etc, and identify what it is that will be useful for the users to monitor themselves. Back to the general chart, the boxes on yellow are issues to be considered when implementing the system. If we take the principle of suggestion on step 4 as an example, the yellow box next to it indicates ‘List of concrete actions’. This means that one should suggest their users a list of actions to follow, which will make it easier for the users when deciding what it is that they can do to
reaffirm their newly acquired attitude. Finally, the white boxes are for the designer to keep in mind what is the aim of each principle and sub-elements. These can prove useful when it is not clear how to implement the principle.

Table 5  Global Framework for Attitude and Behaviour change support.

To be able to translate this framework into a real system, the Global Framework suggests steps to be followed.
Step1. Establish Persuader and Change Type
It is important to clarify whom the persuader is and what change type he or she wants to achieve on the user. There should not be doubts about the change type since it constitutes the final aim of the system. It could be helpful to divide the changes in attitude and behaviour change goals for the project. The attitude change should start to happen while the serious game is played, and the support system will ensure actions (i.e. behaviour change) that reaffirm this.

Step2. Define User and Information
As with any design undertaking, the target user should be well analyzed, allowing the designer to effectively tailor the system for a successful persuasion. The designer should also have the correct and complete information that will be displayed on the system. As the trustworthiness principle (Oinas-Kukkonen and Harjumaa, 2008a, 2009) suggests, it is important that there are no biases or mistakes on the information provided to the user.

Step3. Strategy: Target user motivation
It is essential to ensure that the user will in fact utilize the system. As stated before, the system will be designed mostly to be used outside of the game and debriefing activities, which usually means that the user should access it on their free time. To achieve this, it is important to target what could be the user’s motivation and base the system on this. Once the motivation is clear, rewards can be designed to support it. It is important to provide the user with a clear goal to aim for. As Oinas-Kukkonen and Harjumaa(2009) point out: goals help direct the attention to the actions that lead to them. Having available rewards clear helps the user evaluate and decide that it is the right way to go and a clear goal shows them the path of actions they must follow to arrive there.

It is important to note, that there are two kinds of users to which this support system can be targeted regarding motivation. The ones that are already motivated by the serious goal (e.g. people that want to quit smoking) and the ones that aren’t necessarily motivated by the serious goal the client proposes (e.g. students who should eat healthier). In the second case, the aim is to make them experience the target behaviour so they can realize that it is a good thing for them. The serious goal, though, should never be hidden from the user, since that would be unethical.

Step4. Strategy: Select message display
On this stage, the how is defined. Selecting the right way to display the message and considering different options in various kinds of support, which will lead to the next step.

Step5. Strategy: Choose technology
Once we consider the actions that the user must have available within the system and how they can be presented, it is time to select the technology that will be used to this effect (i.e. printed material, Internet or mobile based applications, etc).

Step6. Optimizing (Increase user ability)
By this time, all elements to be included on the design have already been stated. Optimizing consists on organizing the information in a way that will be more accessible and
understandable for the user. Increasing the user’s ability to navigate through it will make him or her more prone to behaviour change.

**Step7. Finish design**

Here is where all the previous steps begin to take shape. All the system design must be implemented taking into account the *tailoring, trustworthiness and surface credibility* principles. This is to say, that the system should be shaped with the user in mind, making sure that all information is correct and unbiased and it should be presented with a competent look and feel.

As it can be noted, in Table 5 all points of the persuasive context suggested by Oinas-Kukkonen and Harjumaa (2009) are stated except from *Route*. The route is not included in the Framework, since the principles selected already support both the indirect and direct routes, ensuring a wider range of users to be persuaded. In any case, the ideal is for all users to be captivated by the indirect cues but finally be persuaded following the direct route, since this kind of persuasion is believed to be more enduring (Oinas-Kukkonen & Harjumaa, 2009).

In the following chapter, the framework will be adapted to a real case, in an attempt to explain its accurate translation and as means to test the Global Framework as a suggested process.
5 Applying the Global Framework to a case

In order to evaluate how all the previous theory could be applied in practice, a decision was made to use an existing game, created by a company that has experience in developing attitude changing serious games. The selected company is Fabel Kommunication, which is a Swedish company situated in Stockholm. Max Valentin, the C.E.O. of this company and creator of the game used in the case, told me that he believed that something was missing after the debriefing of serious games. He was certain that an extra process would make the attitude change more effective. That statement was the trigger that deployed this research work into finding that missing stage in changing attitudes. In this chapter the case game called Valköping will be analyzed and a couple of concepts will be suggested by following the steps of the Global Framework with the aim of encouraging informal debriefing.

5.1 The game: Valköping

Valköping is a game created by Fabel Kommunication for the SKL (Swedish Association of Local Authorities and Regions). The game is aimed at high school students and it is meant to be played in groups of six persons during class. In Valköping the teams play the role of politicians who need to allocate limited resources to different areas (e.g. health, education) according to their political party’s priorities. The game is played in four rounds, which represent years that pass by in Valköping city. Each year, events happen (i.e. by drawing event cards), which allow players to reallocate the resources that where placed on the board during the first round. Each political party must try to have resources on the areas that their party cares about and they can negotiate with other teams to spend resources in common areas. At the end of the game, the resources on the board are counted giving points to the political parties that support each area and the team that has more points on their main areas is elected, thus winning the game. The points are also counted to see how well the city did during that period. See complete set of instructions in Appendix 2.

5.2 Framework adaptation

Next, the framework will be used as a tool to create a supporting attitude and behaviour change system for the game Valköping.

Step1. Establish persuader and change type

Persuader: SKL (association of municipalities)

Change Type:

a. Attitude change:
   - Politics is fun, like negotiation.
   - Politics is not such a difficult thing to deal with; it can be as simple as the game Valköping.
   - Politicians should be better appreciated. They put lots of effort, even on their spare time, to make the local community work smooth.

b. Behaviour change:
   - Engage in local politics
   - Discuss more about politics
   - More municipal voting*
   - Broadened young participation on local parliament*
*These changes are more difficult to attain, but they would be desirable outcomes.

**Step 2. Define User and Information**

**User:** Students in Secondary and High School (ages 14 to 19)

When tailoring the system in this case, a young look, feel and language must be used so that the students identify the system as their own. The final product should also present a high level of motivation, to justify the extra school work in the eyes of the student. This will be further discussed in step 3.

A system will be provided in each option presented to the client with the aim of providing the students with a clear way to keep track of their progress, as well as giving the teacher a way to measure the students’ progress.

**Information:** The information used for the system would mainly rely on what is included within the game. This is, the resource management system the imaginary political parties and their ideals, etc. Students should also be motivated to learn more about politics. Some interesting things that could be presented on the support as extra information could be:

- Links to municipal/political news (e.g. hallandsnyheter.se)
- Concrete actions that could be taken by the students to improve their understanding of local politics (e.g. go to the parliament and see what’s going on), thus promoting more interest in the field. Activities like interviewing adults regarding their chosen political parties or visiting the parliament could help the students feel more identified by finding the political party that suits them or understanding better the political language and things like how coalitions work in real life.

It is important that all information included in the final system is checked by and approved by the SKL.

**Step 3. Strategy: Target user motivation**

In the case of Valköping, the users are not necessarily motivated to achieve the goals targeted in Change Type by the client. Therefore, we must find an alternative way of motivating them. Another possibility would be to indirectly stimulate them by motivating the teachers. It is important as well to define if the support will be operated in groups or individually, because that also can create opportunities for motivation according to each case. There are mainly 3 structures that the participant distribution can have (Table 6):

A. They can work in groups where they collaborate within the group and compete with other teams. This will allow for social comparison with other groups as well as normative influence (peer pressure) within the group, since they will try to push everyone to get the best result. It also provides with recognition of individuals within the group as well as recognition for the group from other parties if they are doing well. Rewards can be provided to the entire group. I think this is the optimal distribution since it allows both collaboration and competitiveness and I think it would be effective on motivating the students.

B. They can work individually but collaboratively, by defining checkpoints that benefit all when an individual reaches a goal. This makes each individual act as competitive individuals as well as a part of a team when looking for group benefits and encourages normative influence. This technique could work effectively but has a higher risk of not being adopted as fast an effectively as the previous one.
Table 6 Evaluating participant distribution when compared to motivation principles for attitude and behaviour change.

C. They can work individually, which will motivate mostly competition and thus students won’t be as willing to help their peers in advancing.

This same distributions can be generated when motivating teachers.

Table 7 Possible rewards and which persuasion principles they motivate.

It is important that the user that is being motivated has a clear goal and knows what they can get from attaining this goal. In the case of users that want to quit smoking, the target
behaviour is already a good motivation and reward. In the case of Valköping this is not enough. If we want to convince children to understand further the functioning of politics, we must motivate behaviours that let them experience politics first hand with other kinds of rewards. In Table 7, there are some sample rewards and which principles they motivate.

Finally, there are also some actions that are considered motivational by nature (e.g. collecting, following narrative) and that are part of this proposal, to increase students’ involvement. Such actions will be specified for each idea in the next section: 5.3 Options.

**Step4. Strategy: Select message display**

In this step, the designer must define how the information will be communicated and/or displayed to the user. Within this step, some suggestions should be made about actions that promote the serious goal proposed by the client. In the case of Valköping, some of the actions that could help the students become more interested in politics could be to interview adults about their political party preference and what their parties stand for, to analyze what each party proposes and argument which is the party that better represents each students ideals, to go to the parliament in an effort to better understand political processes, etc. More actions should be discussed with SKL when concretizing one of these projects.

*Reminders* in both of the proposed ideas are mainly delivered by computer or SMS messages and consist of the previously suggested actions. The reminders act as signal triggers, since the users will already have the motivation (see step3) and the ability to do it, given that the information they need to accomplish the task will come included in simple terms within the message and it consists of easy assignments. Completing tasks and later commenting it with the teachers and within their groups will help the user make connections and reflect about important issues in politics. Some tasks will allow them to experience specific situations that will let them *rehearse* behaviours and clearly see the *cause-effect* of activities and decisions inside the politics field.

**Step5. Strategy: Choose technology**

Technology will be suggested for each individual option presented (see 5.3 Options).

**Step6. Optimizing**

This is where the *reduction* principle comes to life. This step is about making the information more accessible and understandable for the user. In the case selected, reduction is applied in the form of a game structure. The idea of giving specific tasks to the students will allow them to grasp the information in low doses. The intervention of the teacher and the discussion with their peers will further increase the understanding. The ideas that will be presented in 5.3 Options are not fully developed projects. Therefore, this step would have to be brought into conclusion while developing the project along with the collaboration and feedback of the SKL.

**Step7. Finish design**

This step is also a polishing stage of the system design and thus must be defined when all the other steps have been completed. Therefore, this will not be defined for the specific case within this thesis. However, it should definitely be considered on the future work section.
5.3 Options
In this section two selected ideas that were discussed with the client on a second instance will be presented. For each idea there is a starting diagram, showing some elements from the previous steps that must be considered individually for each concept, which summarizes the project in a few words. These elements are: participant distribution (i.e. played in groups, individually, etc), motivation actions and rewards, regarding motivation (i.e. Step3); and technology suggested (i.e. step5). After that, a description of each concept is enunciated. And finally, some answers to what the client identifies as concerns that the schools adapting the system could have, will be provided.

5.3.1 Valköping Online

<table>
<thead>
<tr>
<th>Participant distribution:</th>
<th>Groups within class (same groups as in the game).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivating actions for students:</td>
<td></td>
</tr>
<tr>
<td>- Collecting points.</td>
<td></td>
</tr>
<tr>
<td>- Immersive simulation. Following narrative.</td>
<td></td>
</tr>
<tr>
<td>- Customizing avatar and giving him/her skills.</td>
<td></td>
</tr>
<tr>
<td>- Negotiation.</td>
<td></td>
</tr>
<tr>
<td>- Collaboration and competition with other groups.</td>
<td></td>
</tr>
<tr>
<td>- Advancing towards goal and earning rewards on the way.</td>
<td></td>
</tr>
<tr>
<td>Rewards:</td>
<td></td>
</tr>
<tr>
<td>- For students: Soft rewards (points, skills for avatars, resources). School benefits (e.g. extra points in exam, longer breaks).</td>
<td></td>
</tr>
<tr>
<td>- For teachers: Recognition, benefits (e.g. training, vacations?)</td>
<td></td>
</tr>
<tr>
<td>Technologies used:</td>
<td></td>
</tr>
<tr>
<td>- Computers (in groups) for tracking scores, receiving tasks and presenting some task results, for teachers to evaluate tasks and give points to teams.</td>
<td></td>
</tr>
</tbody>
</table>

The idea with this project is to continue the Valköping mechanics (for complete game rules see Appendix 2) in an online version and relate it to activities in real-life that will give the students a better understanding of the real political world. These activities will give them points and the opportunity to rearrange resources (like it happens on the game) in order to get more votes. They will receive mini-rewards for getting to certain point amounts. At the end of the term, the party with the most votes (most resources on their relevant areas) will get a reward (e.g. extra points on final exam). The city points will also be counted (as in the game) to see how the city is doing. The whole class will be rewarded according to the state of their city.

Description of the system:
After playing the Valköping game in class, each group gets to name their own party and create their chairman/woman avatar on software that will be provided to the school. Each
group within the class will embody a party within a city that is represented by the class. Each class in a school will be one city and each school one country.

The teacher will have his/her own version of the software where he/she can award the first resources to each group. The group that won the Valköping game will receive extra resources. The teacher announces all of this after they have played the game and each team creates their account and receives their resources. They must then, as in the game, put their resources into the different areas (same areas as the game). They can negotiate with their classmates in doing so.

On the screen the students can see:
- Their avatar chairman/woman with his/her name.
- An image with resources placed in the different areas.
- A number of subscribers (system points), which starts with 6.
- A poll that tells them which party is winning (by counting how the resources are placed, following the same logic as the game).
- A bar that tells them how their city is doing (also according to the resource distribution)
- They can also choose to see how other cities (classes) are doing.

Every now and then, the students will receive automatic messages (which can be synchronized so that they receive them also by SMS). The messages will contain tasks suggested to the students (e.g. interview someone about their political party and write an essay stating what that party mainly stands for). The teacher can then correct this essay and assign system points (subscribers) to that team according to how well they did, by grading them on a 3- or 5-point scale.

Teachers will also be motivated. The teacher with the best city or the best rate of participation from students can get a reward like free training or extra vacation days (if the school allows it). This will ensure that the teachers won’t complain in having to correct things, etc.

The students will see these points on their party profile filling up a bar. Once a team reaches a certain amount of points, which makes the bar complete, they will receive the opportunity to rearrange a certain amount of resources (maybe the one that gets there first gets more resources to move, the second one gets a little bit less and so on). They will also get a small real life reward (i.e. one extra point on next homework, extra break minutes). The points then keep going up but the bar starts again from cero (like levels in a game). Along with the moving of resources, the team gets some skill points for their avatar. They have to choose where to put these points (i.e. intelligence, charisma, etc). Depending on where they put them, their avatar gets certain benefits. For example, putting them in charisma can give them extra subscriber points every now and then, putting them in intelligence might make the following task easier for them, etc.

Once the whole class reaches that same checkpoint, all the class gets extra points or a small real world reward. That is so that the winning groups also have interest in helping their peers out.
While the resources are getting moved around, the poll shows who is leading the votes. At the end of the semester, the team with more votes will win the election and will get a reward. Since the votes are won according to how the resources are located. Teams can always negotiate with another team in order to help each other out and try to win the election.

At the end of the term, also the city points are counted (like on the real game) and if the city did well, the students will receive a real reward. The better they did, the better reward they can get. These rewards should be stated at the beginning of the semester, so they know what they are fighting for.

Answering to school concerns:
A. Does it save money in any way?
   Most of the tasks that will be proposed will be as homework, so it saves school time, more than money. And the fact that all is generated by the same software you can use again and again with every school, makes it quite cheap to produce.
B. In what way does it increase the pedagogical value? (How do students learn more?)
   Students will be motivated by the point system and they will learn by associating real things with the game. The first task for example will let them know more about what each party offers, and a second task can ask them to choose which party they would join and why. This can help students identify themselves better with politics and take it more personal.
C. It shouldn’t add more work to the teachers.
   The idea with this system is that the teachers are motivated as well, so that they don’t mind spending extra time in correcting things or supporting the students.
D. Is it hard or too expensive to implement?
   The support cost would only be the development of the software one time. Then the same software can be distributed to several schools along with the game.

5.3.2 Political treasure hunt

<table>
<thead>
<tr>
<th>Participant distribution:</th>
<th>Groups within class.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivating actions for students:</td>
<td>- Collecting clues</td>
</tr>
<tr>
<td>- Solving mystery</td>
<td></td>
</tr>
<tr>
<td>- Earning advantage in dynamics by learning in free time?</td>
<td></td>
</tr>
<tr>
<td>Rewards:</td>
<td>- For students: Soft rewards (points). School benefits (e.g. extra school points, longer breaks, etc..)</td>
</tr>
<tr>
<td>- For teachers: Recognition, benefits (e.g. training)</td>
<td></td>
</tr>
<tr>
<td>- For school: Recognition, tangible rewards by sponsors?</td>
<td></td>
</tr>
<tr>
<td>Technologies used:</td>
<td>- Poster to keep track on class (marked with teacher stamp)</td>
</tr>
<tr>
<td>- Computer/SMS for getting clues and reminders (and maybe also for keeping track)</td>
<td></td>
</tr>
</tbody>
</table>
In this idea, the students start a political treasure hunt after the game. The treasure hunt will lead them to a place where they must do an activity to earn the next clue. Each place where they go, will give them some knowledge on an issue that is being treated at the local parliament (e.g. they go to a local hospital and interview one of the nurses, they find out how the health department gets resources and what they do with them). The first team to arrive to the last clue will get a reward (i.e. extra points in exam, not having to turn in one homework, etc). When teams arrive to the last clue, this clue will present to the students one problem that the local parliament is dealing with, and the team will have some days to prepare their presentation of a solution. On the same date, every team will present their solution, and the team with the best solution will not only earn a reward but also they get to present their solution to the real local parliament. This grants recognition to the students, the teacher and the school.

The extended idea is to make this an emergent project. Fabel Kommunication can propose 5 different treasure hunts that point at 5 recurrent local political problems. The idea is to create a sandbox for teachers along with the proposed hunts, so that teachers can create their own local treasure hunts following certain parameters. Other teachers can then download these hunts and play them with their students or even modify them a little bit first to be adjusted to local issues.

**Description of the system:**

After finishing the Valköping game, the rules of the treasure hunt will be explained and the groups (which will remain the same as in the game) will create a profile on a computer where they state which school they are in, which class they belong to and input at least one mobile number per person. They will then get a first clue they must follow. Students must follow these clues on their free time, as homework.

The clue will lead the students to a certain place where they will have to do something to earn the next clue. The students will learn about an issue they will use later with each place they visit and each activity they resume. The progress of the team will be tracked on the computer and it can also be tracked on a poster that they will keep on their class, where the teacher can stamp the checkpoints each team completes. This will allow them to see how the other groups are doing.

When reaching a certain checkpoint the first team to get here will get a mini-reward (extra points in next homework) and when all teams have reached that checkpoint all the class will get a mini-reward.

The treasure hunt ends up with having to propose a solution for a real issue on a certain date. The winner will get a reward as well as the opportunity to present their solution on the parliament. The students will get a real grasp of how things work on their community and how things are dealt with in the parliament.

The teachers will be motivated with rewards to help their students around. They will also be motivated into creating new treasure hunts. Once a month the SKL will revise the new treasure hunts uploaded and give a price to the winning teacher. This will motivate to create
more hunts. Other teachers can download the existing hunts and play them with their students.

At the end of the term, the schools that have completed more treasure hunts will be rewarded. This can be achieved with sponsors. And if the prices are good, along with recognition, that should push schools into adopting the system and keeping it alive.

**Answer to school concerns:**

A. **Does it save money in any way?**
   The activities are mostly done out of school so they shouldn’t suppose extra money. Only the initial software should be paid for and the posters if that option is taken.

B. **In what way does it increase the pedagogical value? (How do students learn more?)**
   The students will get to experience how the issues really affect the community, which will get them more involved in trying to solve them. They will understand better how politics work and know what to do to make things happen on this field.

C. **It shouldn’t add more work to the teachers.**
   It will add more work to teachers, but if rewards are good enough, they probably will do it because they want to and do not complain. Media might be willing to cover the story and create more motivation and more sponsors maybe.

D. **Is it hard or too expensive to implement?**
   The software only needs to be designed once along with the parameters that allow teachers to create new games. A system should be designed that lets teachers share hunts, and see all available hunts to be able to download them and play them.
6 Validation
Before the design process started, several contacts were made with Fabel Kommunication in hopes of understanding the company and the game. Fabel even offered an opportunity to assist to one of the game’s testing sessions. Once the information was grasped and the Global Framework was finished, a formal meeting via Skype was arranged to go through some main issues, like if all students have access to computers and how motivating teachers could be a good idea to make students utilize the support.

A second meeting via Skype was arranged once two main system proposals were selected for a first evaluation. Before the meeting, a questionnaire (Appendix 3) was developed which was sent to Fabel Kommunication along with the written description of the ideas for the C.E.O. to calmly evaluate them. The questionnaire was meant to provide answers directly formulated by the source.

The results from the interview are summarized as follows:

A. Two support options were presented to Fabel Kommunication (i.e. the options described in the previous chapter).

B. The C.E.O. inquired further and commented the ideas. He said during the Skype meeting, that the proposals seemed very interesting and stated some concerns that the schools could have in adopting this kind of ideas. These concerns have also been discussed on the previous chapter at the end of each proposal.

C. He pointed out strengths and weaknesses of both ideas. In the questionnaire, he was asked to mention at least one positive and one negative thing of each proposal (Appendix 3). The things he liked about the Valköping online option are the breaking out of the classroom, and how the group is able to earn awards together, transferring the accomplishments to traditional tests. On the other hand he points out that the reward mechanism doesn’t follow the structure of economy growth. I think this could be better adapted, once such structure is discussed with the client. This observation reinforces the importance of having all the information in step2 of the Global Framework.

Concerning the second option, namely the political treasure hunt, Fabel’s C.E.O. appreciates very much the fact that it is composed by modules (i.e. different treasure hunts). He argues that this feature allows teachers to select the modules that better suit their teaching needs. He also likes the fact that new modules can be created according to a certain model and that teachers are motivated to do so by the possibility to get a reward. He thinks this idea has more potential to generate learning and he likes the narrative approach of mystery. The problem he sees with this option is that he feels it will require strict moderation and support and that it relies on a community that must be maintained. All of this, he states, will drive up the costs and could make it limited in time like many dead online resource networks. On this note, I would like to point out that the initial idea would be to have a certain amount of hunts already planned, and that are the origin of the support. The possibility to create more hunts would be an option to motivate emergence on this project.

D. Fabel’s C.E.O. was asked to choose which idea he believes has more potential and why. The ideas presented to Fabel were seen as concepts with potential, being the second one, the favourite in the eyes of the C.E.O. The main advantage he sees in the political treasure hunt idea is that it is modularized, which allows teachers to use the modules that better suit their goals.
Both proposals have been conceived in tight relation with the framework, which can be appreciated on chapter 5. This suggests that the Global Framework can effectively direct the conception of the intended systems, hinting to its validity as a tool to produce such systems.
7 Conclusion

7.1 Results

The developed framework was applied to an existing serious game. Iteration on its application resulted in some enhancements. For example, when applying the framework it was evident that motivation was an important issue when the persuaders’ goals are not the same as the users’ goals. In the case of Valköping, SKL wants to show students how politics are fun and they intend to get young people more engaged. However, in this case, students are not motivated by the goal of being more engaged in politics, unlike, for example, people that want to quit smoking. For this reason, the users that fall in this unmatched goal category, must be further analyzed and understood as to find a goal that does motivate them, and that will guide them into experiencing the goal the persuader offers.

The proposals developed and presented to Fabel, have been conceived by following the framework. The client (i.e. Fabel) showed interest and appreciation for the ideas, during the Skype meeting. He sees the Political Treasure Hunt option as the one with more potential, highlighting its modularity as a benefit. He was also very interested on the narrative approach of mystery, which was suggested as a motivational action in this case. He was concerned about the community resource sharing of the idea, where teachers are motivated to create new hunts based on a model and share them with other teachers. This feature is not a central feature of the proposal, but I think it could create emergence. It would make the support fresher and updated in time, which would ensure a longer period of informal debriefing and thus more reflection on the issue.

It is clear that these proposals still need some iteration with Fabel to reach their full potential and be presentable to SKL as a project. The technical issues that Fabel points out during the questionnaire can be worked out further with the company and with the framework in mind.

Summarizing, a Global Framework that guides the creation of informal debriefing supports for attitude and behaviour changing games has been proposed with a strong theoretical background. This was one of the aims of this study. As for the practical side of this thesis, more work is required to fully test the potential of the framework. However, I think it is already a useful tool in better understanding a project, following a recommended process and pointing what to aim for when the goal is changing attitudes and behaviours.

7.2 Discussion

Many serious games manage to change attitudes for a while. But I believe that without further reflection on that new attitude and with no action on this new conviction, it is most probable that people will forget the game or at least the strong feeling that it generated. It is true that debriefing is meant to generate deep thinking and discussion, but that might only get a few followers to continue with their new mentality. This thesis analyzes all of this with a theory lens and supports my belief that something more needs to be done. The conviction achieved with the serious game and consequent debriefing must be pushed further and trigger actual behaviours that will allow this new attitudes to be established deeper inside the players minds.
The framework was mainly developed to serve as a guide while designing informal debriefings that change attitudes and leads to action, but it is not crazy to think that this Global Framework for behaviour change could be considered when first designing a serious game. This would allow for the game designer to take the selected principles into account and generate attitude and behaviour change within the game. In any case, I believe it is the repeated action and reflection on the issue that finally sets the new attitude deep in our minds and that is why I think informal debriefing should always be motivated and maybe even planned from the conception stage of the serious game.

Strengths of this work include a wide range of fields and sources studied, resulting on a quite strong theoretical background.

The opportunity to test the framework on a real case is also a strong point, since it helped iterate the framework, allowing for it to be a more useful tool. It gives the study a sense of practicality and reality, which some academic works lack.

The principal weakness of this project is the reduced amount of time available for its completion, since that cut short the application of the theory into the case. For this reason, the project is meant be continued until its completion, so that the theory can be effectively evaluated.

Another weak point is that some of the charts and cross-referenced information has been defined by the author, which could lead to biases. A solution would be to work in collaboration with more researchers that can repeat the process and compare results. This would provide a more accurate selection of principles.

### 7.3 Future work

Unfortunately, the time frame provided for the present thesis doesn’t allow for any of these projects to be further developed. But, the intention is to proceed with the conception trough iterative design following Fabel’s feedback and finally present a selected idea to SKL with the objective of getting their full support and cooperation as to complete the intended system. Once approved, all information should be recollected from SKL, and implemented into the system without forgetting the reduction principle (i.e. simplify the information so that the students can grasp the concepts easily). The system would be tailored to fit the users preferences, as discussed on chapter 5, and trustworthiness along with surface credibility would be ensured by providing unmistakable and unbiased information through a system that has a professional look and feel.

The selected project should then be optimized for testing. This means that real students within the age range will test it, and that questionnaires and other measurement devices should be prepared for attitude and behaviour change evaluation. A full session should be planned, where the students play the serious game, reflect and discuss it further during the debriefing and are finally introduced to the selected support. Some things that should be measured on the testing should be:

- The effectiveness of the motivation. Are students adopting the system by own will?
- Do students really take action, motivated by the system?
- Do students really change their attitudes towards politics?
- If so, how long does this attitude change last with and without the support use?
- How does the elected technology affect all the process?

Other future work includes the adaptation of the framework to other kinds of attitude changing games. For example, games where the goal attitude can motivate the user by itself. Being able to apply the framework to different kinds of games can reveal more strengths and weaknesses of the framework.

It would be interesting to use the framework as a guide from the beginning of the serious game creation process. This would allow to design from the serious game to the debriefing and the informal debriefing as a connected whole.

Possibilities are wide, with the use of this framework. But first, it is necessary to develop a complete project based on the framework and test it with real users, to unveil the real value of this work.
References


Appendix 1: Persuasive System Design Principles
Primary Task Support Design Principles (Oinas-Kukkonen and Harjumaa, 2008b)

<table>
<thead>
<tr>
<th>Principle</th>
<th>Example requirement</th>
<th>Example implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reduction</td>
<td>A system that reduces complex behavior into simple tasks helps users perform the target behavior and it may increase the benefit/cost ratio of a behavior.</td>
<td>Mobile application for healthier eating habits lists proper food choices at fast food restaurants [24]. Smoking cessation website provides an interactive test which measures how much money a user will save with quitting.</td>
</tr>
<tr>
<td>2. Tunneling</td>
<td>Using the system to guide users through a process or experience provides opportunities to persuade along the way.</td>
<td>Smoking cessation website offers information about treatment opportunities after a user has answered an interactive test about how addicted (s)he is on tobacco.</td>
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<tr>
<td>3. Tailoring</td>
<td>Information provided by the system will be more persuasive if it is tailored to the potential needs, interests, personality, usage context, or other factors relevant to a user group.</td>
<td>Personal trainer website provides different information content for different user groups, e.g. beginners and professionals. Website for recovering alcoholics presents a user such stories which are close to one's own story.</td>
</tr>
<tr>
<td>4. Personalization</td>
<td>A system that offers personalized content or services has a greater capability for persuasion.</td>
<td>Users are able to change the graphical layout of an application or the order of information items at a professional website.</td>
</tr>
<tr>
<td>5. Self-monitoring</td>
<td>A system that helps track one's own performance or status supports in achieving goals.</td>
<td>Heart rate monitor presents a user's heart rate and the duration of the exercise. Mobile phone application presents daily step count [3].</td>
</tr>
<tr>
<td>6. Simulation</td>
<td>Systems that provide simulations can persuade by enabling them to observe immediately the link between the cause and its effect.</td>
<td>Before and after pictures of people who have lost weight are presented on a website.</td>
</tr>
<tr>
<td>7. Rehearsal</td>
<td>A system providing means with which to rehearse a behavior can enable people to change their attitudes or behavior in the real world.</td>
<td>A flying simulator.</td>
</tr>
<tr>
<td>Principle</td>
<td>Example requirement</td>
<td>Example implementation</td>
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<tr>
<td><strong>8. Praise</strong>&lt;br&gt;By offering praise a system can make users more open to persuasion.</td>
<td>System should use praise via words, images, symbols, or sounds as a way to give positive feedback for a user.</td>
<td>Mobile application which aims at motivating teenagers to exercise praises user by sending automated text-messages for reaching individual goals. [24]</td>
</tr>
<tr>
<td><strong>9. Rewards</strong>&lt;br&gt;Systems that reward target may have great persuasive powers.</td>
<td>System should provide virtual rewards for users in order to give credit for performing the target behavior.</td>
<td>Heart rate monitor gives a user a virtual trophy if they follow their fitness program. Game rewards users by altering media items, such as sounds, background skin, or a user’s avatar according to user’s performance. [21]</td>
</tr>
<tr>
<td><strong>10. Reminders</strong>&lt;br&gt;If a system reminds users of their target behavior, the users will more likely achieve their goals.</td>
<td>System should remind users of their target behavior during the use of the system.</td>
<td>Caloric balance monitoring application sends text-messages for their users as daily reminders. [10]</td>
</tr>
<tr>
<td><strong>11. Suggestion</strong>&lt;br&gt;Systems offering suggestions at opportune moments will have greater persuasive powers.</td>
<td>System should suggest users certain behaviors during the system use process.</td>
<td>Application for healthier eating habits suggests children to eat fruits instead of candy at a snack time.</td>
</tr>
<tr>
<td><strong>12. Similarity</strong>&lt;br&gt;People are more readily persuaded through systems that remind themselves in some meaningful way.</td>
<td>System should imitate its users in some specific way.</td>
<td>Slang names are used in an application which aims at motivating teenagers to exercise. [24]</td>
</tr>
<tr>
<td><strong>13. Liking</strong>&lt;br&gt;A system that is visually attractive for its users is likely to be more persuasive.</td>
<td>System should have a look and feel that appeals to its users.</td>
<td>Web site which aims at encouraging children to take care of their pets properly has pictures of cute animals.</td>
</tr>
<tr>
<td><strong>14. Social role</strong>&lt;br&gt;If a system adopts a social role, users will more likely use it for persuasive purposes.</td>
<td>System should adopt a social role.</td>
<td>E-health application has a virtual specialist to support communication between users and health specialists. [19]</td>
</tr>
<tr>
<td>Principle</td>
<td>Example requirement</td>
<td>Example implementation</td>
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<tr>
<td>15. Trustworthiness</td>
<td>System should provide information that is truthful, fair and unbiased.</td>
<td>Company Web site provides information related to its products rather than simply providing advertising or marketing information.</td>
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<td></td>
<td></td>
<td>Company Web site provides information about their core know-how.</td>
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<td></td>
<td></td>
<td>Company Web site is updated regularly and there are no dangling links or out-of-date information.</td>
</tr>
<tr>
<td>16. Expertise</td>
<td>System should provide information showing expertise.</td>
<td>Company Web site provides information about their core know-how.</td>
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<td></td>
<td>Company Web site is updated regularly and there are no dangling links or out-of-date information.</td>
</tr>
<tr>
<td>17. Surface credibility</td>
<td>System should have competent look and feel.</td>
<td>There are only a limited number of ads on a company Web site.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>There are only a limited number of ads on a company Web site.</td>
</tr>
<tr>
<td>18. Real-world feel</td>
<td>System should provide information of the organization and/or actual people behind its content and services.</td>
<td>Company Web site provides possibilities to contact specific people through sending feedback or asking questions.</td>
</tr>
<tr>
<td>19. Authority</td>
<td>System should refer to people in the role of authority.</td>
<td>Web site quotes an authority, such as a statement by government health office.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Web site quotes an authority, such as a statement by government health office.</td>
</tr>
<tr>
<td>20. Third-party endorsements</td>
<td>System should provide endorsements from respected</td>
<td>E-shop shows a logo of a certificate which assures that they use secure connections.</td>
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<tr>
<td></td>
<td>sources.</td>
<td>Web site refers to its reward for high usability.</td>
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<tr>
<td></td>
<td></td>
<td>Web site refers to its reward for high usability.</td>
</tr>
<tr>
<td>21. Verifiability</td>
<td>System should provide means to verify the accuracy of site content via outside sources.</td>
<td>Claims on a Web site are supported by offering links to other web sites.</td>
</tr>
<tr>
<td>Principle</td>
<td>Example requirement</td>
<td>Example implementation</td>
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<tr>
<td>22. Social learning</td>
<td>A person will be more motivated to perform a target behavior if he or she can use</td>
<td>A shared fitness journal in a mobile application for encouraging physical activity.</td>
</tr>
<tr>
<td></td>
<td>a system to observe others performing the behavior.</td>
<td>[3]</td>
</tr>
<tr>
<td></td>
<td>System should provide means to observe other users who are performing their target</td>
<td></td>
</tr>
<tr>
<td></td>
<td>behaviors and to see the outcomes of their behavior.</td>
<td></td>
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<tr>
<td>23. Social comparison</td>
<td>System users will have a greater motivation to perform the target behavior if they can</td>
<td>Users can share and compare information related to their physical health and smoking</td>
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<td></td>
<td>compare their performance with the performance of others.</td>
<td>behavior via instant messaging application. [21]</td>
</tr>
<tr>
<td></td>
<td>System should provide means for comparing performance with the performance of other</td>
<td></td>
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<tr>
<td></td>
<td>users.</td>
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<tr>
<td>24. Normative influence</td>
<td>A system can leverage normative influence or peer pressure to increase the likelihood</td>
<td>Possibility to challenge relatives or friends to quit smoking from a web site via</td>
</tr>
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<td></td>
<td>that a person will adopt a target behavior.</td>
<td>email or text message.</td>
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<td></td>
<td>System should provide means for gathering together people who have the same goal and</td>
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<td></td>
<td>get them to feel norms.</td>
<td></td>
</tr>
<tr>
<td>25. Social facilitation</td>
<td>System users are more likely to perform target behavior if they discern via the system</td>
<td>A shared fitness journal in a mobile application for encouraging physical activity.</td>
</tr>
<tr>
<td></td>
<td>that others are performing the behavior along with them.</td>
<td>[3]</td>
</tr>
<tr>
<td></td>
<td>System should provide means for discerning other users who are performing the behavior.</td>
<td></td>
</tr>
<tr>
<td>26. Cooperation</td>
<td>A system can motivate users to adopt a target attitude or behavior by leveraging</td>
<td>The behavioral patterns of overweight patients are studied through a mobile application,</td>
</tr>
<tr>
<td></td>
<td>human beings’ natural drive to co-operate.</td>
<td>which collects data and sends it to a central server where it can be analyzed in detail.</td>
</tr>
<tr>
<td></td>
<td>System should provide means for co-operation.</td>
<td>[10]</td>
</tr>
<tr>
<td>27. Competition</td>
<td>A system can motivate users to adopt a target attitude or behavior by leveraging</td>
<td>Online competition, such as Quit and Win (stop smoking for a month and win a prize).</td>
</tr>
<tr>
<td></td>
<td>human beings’ natural drive to compete.</td>
<td></td>
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<tr>
<td></td>
<td>System should provide means for competing with other users.</td>
<td></td>
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<tr>
<td>28. Recognition</td>
<td>By offering public recognition (for an individual or a group), a system can increase</td>
<td>Personal stories of the people who have succeeded in their goal behavior are published</td>
</tr>
<tr>
<td></td>
<td>the likelihood that a person or group will adopt a target attitude or behavior.</td>
<td>on a Web site. Names of awarded people, such as “quitter of a month”, are published on</td>
</tr>
<tr>
<td></td>
<td>System should provide public recognition for users who perform their target behavior.</td>
<td>a Web site.</td>
</tr>
</tbody>
</table>
Appendix 2: Case game rules
Valköping game rules translated by Fabel Kommunikation from their original game rules, which are written in Swedish:

Gaming Rules

Welcome to Valköping - a combination of a municipality and a county council. It is at the local level where politicians are responsible for many of the areas that are essential for making the society function. To be a local politician is much about prioritizing, allocating and making the most out of limited resources. The political game about Electown (Valköping) deals with exactly these challenges.

In the game, You represent members of the council and all represent your own party. As party representatives you will try to prioritize the areas in society that are located closest to your heart. The game objective is to invest and reallocate resources to suit your agenda as well as the sustainable development of Electown.

The game is played in four rounds, each corresponding to one year. In the middle of the period, after two rounds, an opinion poll will be done to assess what the voters think of your political visions, actions and arguments.

What is happening in the daily life of Electown, you will discover by reading an Action card (“Händelsekort”) in the start of each round. How you choose to react in relation to the happening announced on the action card will depend on what character you are, something that your Character Card (“Kärläskort”) will help you to remember.

To win the game you have to collect as many resources as possible on the areas that you are passionate about. But be aware that cooperation can pay off sometimes...

Playing the game
Preparations.
1) Drag one character card each.
2) Distribute three resources for each player.
3) Roll the dice to decide who will start.
4) The person who starts does so by introducing herself to the others. The text on your character card will help you with the introduction.
5) Continue by placing your three resources in any areas on the game board.
6) Let the other players repeat the actions (introduction and placing of resources).

Now let the game begin!
Year one
During the first year it is up to you to make your standing point and your prioritizations clear. As representatives of the council, it is important that you also keep track of the political ambitions of your fellow politicians - perhaps you have common interests that can be beneficial in the future?
1) The first player starts by rolling the dice. The dice determines how many resources the player gets to move on the board. You may redistribute resources however you like, taking from others' priorities or reallocating your own.
2) Move as many resources as the dice shows.
3) The turn to roll the dice then moves to the next player in rotation order.
4) When all players have reallocated resources, it is time to draw a common action card. Follow the instructions on the card. If you cannot take action or agree on how to act, the resources will stay untouched and are not to be placed on the game board.
When you’re done it is time to move forward into the second year.

Year two
A year has now passed and life in Electown runs smoothly! During the mandate period this second year it is now time to continue working for the creation of a better society in Electown. And don’t forget; Results are important for maintaining your voters confidence!
1) The second player is now starting to roll the dice and re-allocate as many resources as the dice shows. You may redistribute resources however you like, taking from others' priorities or reallocating your own.
2) The turn to roll the dice then moves to the next player in rotation order.
3) When all players have reallocated resources, it is time to draw a common action card. Follow the instructions on the card. If you cannot take action or agree on how to act, the resources will stay untouched and are not to be placed on the game board.
When you all are ready, it's time to have a closer look on the state of Electown by an opinion poll.

Opinion poll
Two years have passed and it is time to see how everyone is doing so far. The opinion poll will show what the residents of Electown think about their elected officials.
1) Each player counts the number of resources on his or her prioritized areas – you earn one point per resource on your priority areas and two points for every resource on your key area / primary concern (as marked on your character card).
2) The player who earns the most points wins the poll and will get two new resources to allocate.
Once you have decided who is doing best in the eyes of Electown, it is time to move on to year three - and make Electown grow stronger!

Year three
Still, it is time for change! During a term of year three, it is time to step up the pace – if you do not dare to give it all you’ve got, there is little chance for you to be remembered as significant for Electown in the future.
1) The third player begins to roll the dice and re-allocate as many resources as the dice shows. You may redistribute resources however you like: take them from others’ priorities or reallocate your own.

2) The turn to roll the dice then moves to the next player in rotation order.

3) When all players have reallocated resources, it is time to draw a common action card. Follow the instructions on the card. If you cannot take action or agree on how to act, the resources will stay untouched and are not to be placed on the game board.

Year four
Welcome to the election year! One campaign follows the other and the stakes are high. Heated debates will be a great part of the year, but still nothing is decided until late on the election night, anything can happen!

1) The fourth player starting by rolling the dice and re-allocate as many resources as the dice shows. You may redistribute resources however you like, taking from others’ priorities or reallocating your own.

2) The turn to roll the dice then moves to the next player in rotation order.

3) When all players have reallocated resources, it is time to draw a common action card. Follow the instructions on the card. If you cannot take action or agree on how to act, the resources will stay untouched and are not to be placed on the game board.

Who are the winners in the election
Count the number of resources on your prioritized areas. You earn one point for every resource placed on your prioritized areas, and two for those placed on your key area / primary concern (as marked on your character card). / The player with the highest score wins the election. Congratulations!

But how is Electown doing on a more general level? Count all resources on the board; they all give you one point. Those placed in the core areas of Health, Education and Care give you double points. You must have at least one resource placed in these areas, otherwise Healthcare, Education and Care poorly managed and the inhabitants really unhappy. Below you can see what grade your results in, and take what it means for Valköping.

Points

<table>
<thead>
<tr>
<th>3 players</th>
<th>5 players</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–11 points: Failure</td>
<td>0–12 points: Failure</td>
</tr>
<tr>
<td>12–22 points: OK</td>
<td>13–24 points: OK</td>
</tr>
<tr>
<td>23–31 points: Good</td>
<td>25–34 points: Good</td>
</tr>
<tr>
<td>32–38 points: Excellent</td>
<td>35–42 points: Excellent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4 players</th>
<th>6 players</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–12 points: Failure</td>
<td>0–13 points: Failure</td>
</tr>
<tr>
<td>13–24 points: OK</td>
<td>14–26 points: OK</td>
</tr>
</tbody>
</table>
25–33 points: **Good**
34–40 points: **Excellent**
27–36 points: **Good**
37–44 points: **Excellent**

**A. Failure**
This in unfortunately not that good and to be honest; in your hands Electown is likely to be appointed as one of Sweden’s worst-run cities. You have failed to deal with core areas of health, education and care and none of you will be re-elected.

**B. OK**
You can’t say Electown is not Sweden’s most happy city. Foreign visitors are not very eager to learn from you. But the positive is that you manage to keep your heads above water. You can handle the most important commitments and there is clearly hope for the future in Electown!

**C. Good**
Well, this looks pretty good! People are actually moving in to Electown and both entrepreneurship and optimism is increasing. Not everything is perfect but you are on a good way!

**D. Excellent**
You have done an excellent job! The award of Sweden's best city is yours and well deserved it is too.

**Extended rules - for those of you who have a bit more time and are in the mood for debate!**
If you have more time, you can let each player draw an individual action cards during each of the four “years”. The action card is then drawn before the player rolls the dice to re-allocate his/her resources.
Besides this, the game is played like before; you prepare the same way and count your points in the same way as in the previous version. See table below for your results.

**Points**

<table>
<thead>
<tr>
<th></th>
<th>3 players</th>
<th>5 players</th>
<th>4 players</th>
<th>6 players</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–14 points: Failure</td>
<td>0–21 points: Failure</td>
<td>0–17 points: Failure</td>
<td>0–24 points: Failure</td>
<td></td>
</tr>
<tr>
<td>26–33 points: Good</td>
<td>42–50 points: Good</td>
<td>33–40 points: Good</td>
<td>47–60 points: Good</td>
<td></td>
</tr>
<tr>
<td>34– points: Excellent</td>
<td>51– points: Excellent</td>
<td>41– points: Excellent</td>
<td>61– points: Excellent</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: Evaluation of proposals questionnaire

SETTING GENERAL GOALS:
1. What ATTITUDE change goals does the SKL have for the Valköping game?* Which attitudes do they want to change or generate on the students?

There are two levels of answers on this. The game is part of a bigger strategy called "En fråga om demokrati" - an issue of democracy. The big picture is to give local politicians a better reputation. When measured, the general public has low appreciation of the job carried out. The goal is to change this image and show that the politicians mostly do this on their spare time and puts lots of effort to make the local community work smooth.

The Valköping game is one part of this strategy. The game is the tool to reach the younger audience those first time voters.

The goals are to raise the number of first time voters in local and regional elections. In the long run to make youth more interested in engaging into politics.

2. What BEHAVIOUR change goals does the SKL have for the Valköping game? Which behaviours do they want to generate on the students?
- To actively discuss political issues among peers.
- To go to the election urns every fourth year.

3. How do you address this with your game (Valköping)? * Which elements guide the students towards those goals?

The participatory format in it self is a method to activate a political discussion. The content of the mechanics are redistribution of resources, that is, prioritizing limited resources. The other focus is negotiation, that is, to be successful in redistributing you have to find political support.

4. Is there something BASIC the students must learn in order to grasp politics as an easier matter? *

- Yes
- No

5. What is this BASIC thing the students must learn in order to grasp politics as an easier matter? *

They have to understand the responsibility of the municipality and the region. This is displayed on the board of the game, but the student needs to have an understanding of what each area means.

DISCUSSING IDEAS:
5. Mention at least ONE POSITIVE THING about the "VALKÖPING ONLINE" idea. *

A really great thing is the group assessment part. That the group working together can get rewards, which is transferred to the normal tests. This is normally difficult to make but personally I find it important.
The breaking out of the classroom is always really good thing to do. Confronting reality is great.

6. Mention at least ONE NEGATIVE THING about the "VALKÖPING ONLINE" idea. *
The link between that the students earns points by doing learning activities and that this gives points in the simulation does not make sense to me. A local economy does not grow in that way, the reward system does not follow the real growth mechanism.

One of my core ideas of the preparation - experience - learning (your task - post learning) is that you swing between abstraction and concretization. This follows in the game of Valköping as a playful element; I lack the implementation or consequence thinking of what your actions leads to.

7. Mention at least ONE POSITIVE THING about the "POLITICAL TREASURE HUNT" idea. *
It has a good modular potential. I mean by that, it can be designed as a chain that leads to learning. The teacher can use the modules that suit them.

The teachers design award. By creating a pool of resources according to a given framework is great.

I think this more easily than the first one will have the potential to generate learning.

I like the narrative approach, solving a mystery.

8. Mention at least ONE NEGATIVE THING about the "POLITICAL TREASURE HUNT" idea. *
It has a "campaign" touch. I think it requires a strict moderation and a support to work. It is not self sustainable, since it is based on community and that community needs to be coordinated and continuously motivated. This drives costs up and makes it limited in time. There are a great number of dead on-line resource networks.

9. Please give your opinion on ideas proposed *

<table>
<thead>
<tr>
<th>Idea</th>
<th>I like this idea a lot</th>
<th>I like this idea a little</th>
<th>I am indifferent</th>
<th>I'm not sure this would work</th>
<th>I don't like this idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valköping Online</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Treasure Hunt</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Which idea do you think has the most potential? *
Treasure Hunt.
11. Why do you think that idea has the most potential? *
It is modularized. Teachers often want activities that they can use for a lesson. A module if
designed in a good way could be a lesson with a good post structure. In a way the board
game would be part of a "family" of modules.
The Valköping online requires much more involvement from the teacher.

WRAPPING UP...

12. Any more ideas or comments about the "VALKÖPING ONLINE" idea?
Could it be a democracy module built in to "SIMS"? Creating your own computer graphics for
games is very expensive if you want it to look the slightest bit cool. Normally the students
have high demands of computer games from the gaming industry and pedagogical games
look like shit.

13. Any more ideas or comments about the "POLITICAL TREASURE HUNT" idea?
What could such a mystery be? Could we design a mystery for each of the 12 aspects? The
class works in pairs solving one mystery each and then presenting for the others in the class?

THANKS!