



Pro(f)Social: a serious game to improve teachers' bystander behaviour in cyberbullying situations

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Abstract

Cyberbullying is an issue that is present in society now more than ever before. With the development of technology, and an increase in our dependency on it, students have to deal with cyberbullying situations more frequently. Serious games have shown promising results in their efficacy as a means to promote pro-social behaviour. Pro(f)Social is a serious game for teachers, that aims to improve their bystander behavior on cyberbullying situations. It is a visual novel style game, where the player plays in the role of a teacher in a school where there is a cyberbullying situation happening between students. Their goal is to unravel the details of the situation, while still doing their school related work at the same time. In the game, they have to explore the school, dialogue with students, and complete their school tasks during the course of 3 breaks and classes. All of these actions cost time, and the player has a limited amount of time in each of the breaks. The scoring system reflects the goal of the game, as the player is rewarded for being pro-social, by paying attention to the dialogues, and then identifying the details of the situation correctly during inner reflection moments in the game. The player can get feedback throughout the game, which shows them if they were pro-social or not with their actions and opinions. The prototype for the first of four sessions of this game has been validated with teachers, and it showed promising results in how it portrayed the situations and its utility as a formation tool.

Keywords

Cyberbullying, serious games, pro-social, teachers, improve bystander behavior, visual novel

Resumo

O cyberbullying é um problema que está presente na sociedade agora mais do que nunca. Com o desenvolvimento da tecnologia e o aumento da nossa dependência dela, os alunos têm que lidar com situações de cyberbullying com mais frequência. Os jogos sérios têm mostrado resultados promissores na sua eficácia como meio de promover o comportamento pró-social. O jogo sério Pro(f)Social é destinado a professores, com o intuito de melhorar o efeito de *bystander* em situações de cyberbullying. É um jogo no estilo de novela visual, onde o jogador desempenha o papel de um professor numa escola onde há uma situação de cyberbullying a acontecer entre os alunos. O objetivo é descobrir os detalhes da situação, e ao mesmo tempo continuar a fazer o trabalho referente à escola. No jogo, os jogadores têm que explorar a escola, dialogar com os alunos e completar as suas tarefas escolares durante 3 intervalos e aulas. Todas essas ações custam tempo, e o jogador tem um tempo limitado em cada um dos intervalos. O sistema de pontuação reflete o objetivo do jogo, pois o jogador é recompensado por ser pró-social, prestando atenção aos diálogos e identificando corretamente os detalhes da situação durante os momentos de reflexão e introspeção do jogo. O jogador pode obter feedback ao longo do jogo, o que mostra se ele foi pró-social ou não com suas ações e opiniões. O protótipo para a primeira de quatro sessões deste jogo foi validado com professores e mostrou resultados promissores na forma como retratava as situações e na sua utilidade como ferramenta de formação.

Palavras Chave

Cyberbullying, jogos sérios, pró-social, professores, melhorar o efeito de bystander, novela visual

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Introduction

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1.1 Motivation

Cyberbullying or bullying via data and communications technology instruments, such as the internet and mobile phones, is a problem of growing interest with school-aged students.

About 37% of young people between the ages of 12 and 17 have been bullied online, with 30% being recurring cases [1]. This is observed through social media in a variety of formats, including personal messages, emails, commentaries, pictures, and catfishing¹. Cyberbullying can happen often and repeatedly thanks to a freedom of access to a person's life and can be perpetuated through anonymous, gossip-fuelled apps such as Instagram, Facebook, and Twitter. Since arising with the growth of technology in the 1990s, cyberbullying methods have been increasing in both quantity and accessibility. Despite legislative attempts to fight cyberbullying, online harassment remains a serious issue in today's society [2].

Although generally speaking cyberbullying incidents happen over the internet, the victims feel their harmful consequences in school. This can contribute to a decline in learning, and brings instability to their school life, and their relationships with other people in general [3]. Many times, the victims refrain from asking for help, either be it from their parents, their teachers or their fellow classmates, because of reasons ranging from feeling intimidated by the reaction of the bullies in question, being scared to appear weak to others, or even by thinking it would not change anything in the situation. This is propagated by the fact that the cyberbullies in question are usually from the same school or even the same class, and although many times there are other students witnessing these bullying events, they do not offer help or ask an adult for guidance, even though they know the wrongfulness of the situation. This is a common studied phenomenon known as the "Bystander Effect" [4]. As such, adults, specifically parents/tutors and teachers, being the more common type of adults the teenagers are in contact with, need to take initiative, and be present for these students that are dealing with cyberbullying.

Teachers, in particular, play a big role since they are at school and more often than not end up interacting with both the victims and the bullies. They are in a position where they can observe the interactions between the students, and can infer if someone is being bullied or is suffering from the consequences of cyberbullying. However, this is all dependent on the teachers themselves, their knowledge on how to identify these (cyber)bullying scenarios, and their type of response when faced with them. This need for information on how to detect and identify cyber/normal bullying scenarios is an essential part of combating this problem, and multiple learning programs have been developed and presented with positive results in the last decade.

Some of these programs include Serious Games, which are designed with the intent to educate the user in a more playful way, without losing the important teaching part. These types of games have been gaining traction over the last few years, with many of them showing positive results in bridging the gap

¹The practice of pretending on social media to be someone different, in order to trick or attract another person

between information and entertainment. The market for cyberbullying oriented games is not huge, but some games have showed promising results. We intend to create a serious game that can sensitize teachers to cyberbullying situations, as well as give insight on how to properly identify students that are currently being victimized and what actions they should take to best interact with the victim and get a successful outcome on the situation.

This work is a part of a bigger project, Te@ch4SocialGood, which aims to promote pro-sociality in schools to prevent cyberbullying. This project has the goal of developing, testing and to study the effectiveness of a blended learning teacher training program in the area of cyberbullying. The program is to include an information technology component and a face-to-face component to promote pro-sociality and well-being among youth through changes in teachers' emotional regulation and moral engagement with cyberbullying, as well as their socio-emotional ethical competence to deal with the phenomenon, their well-being, professional vocation, emotional exhaustion, absenteeism and presentism.

1.2 Problem

Although serious games about cyberbullying have had success in informing and teaching the users about the issue, there aren't many games targeted at professors and educators. Most of them are meant for children/young teenagers to play, to teach them about the effects of bullying and its consequences. In the case of adult educators, they most likely already have this knowledge; for them, a game that instructs them on how to detect, approach and help a victim of cyberbullying would be more adequate. As such, we shall state the problem as follows: How can we use an interactive digital game to improve bystander behaviour and help sensitize teachers to intervene in cyberbullying situations?

1.3 Objectives

The main goal of the project is to create a fully fledged game that can be used as a tool to help adult teachers be sensitized in cyberbullying situations. As of the moment of writing this thesis, the game has one session out of four completely implemented (which was tested, as explained further in the document), with an introductory session that works as the tutorial complete as well.

For the scope of this thesis, we intended to create a prototype, taking the already existing serious game meant for children/teenagers Com@Viver, and creating a game that both told a story with the same characters, as well as developing the already established universe. Content from the Com@Viver game was integrated in our game (specifically the first of four parts that game is divided into), as well as adding new mechanics and gameplay differences, and changing the intended target audience of the game to teachers and educational instructors. Being now meant for adult teachers, some adapta-

tions were made, due to the design the game followed, as will be explained in the later sections. The game was developed in a different engine than Com@Viver, but incorporates its scenarios and dialogue components, remaining faithful to it. The team who developed Com@Viver was also involved in the development of our game, providing guidance in terms of the psychological/educational dimensions of the experience, and giving feedback in specific milestones of the project development. In terms of testing, we evaluated the reception of the prototype with a pilot study with teachers so as to ascertain what worked and what should be changed for the final game in the future.

For this thesis, we had the following objectives:

1. Perform a literature review on existing serious games
2. Identify common game mechanics for serious games about cyberbullying or with teachers as a target audience
3. Create and develop the prototype for a serious game for teachers using content from the already existing game Com@Viver, through an iterative process with the same team of psychologists
4. Validate this game with teachers
5. Modify the prototype based on the feedback and complete the implementation of its first session, to have a marker for the development of the remaining sessions

1.4 Document outline

In chapter 1 we introduce the problem, and present our objectives with this work. Chapter 2 provides an analysis on the current literature of our problem, as well as presenting computational models that have an impact on our solution. In chapter 3 we describe our core concept design for the game, and in chapter 4 we present our initial prototype, including the more technical aspects of it. Chapter 5 details the validation process of the prototype and the characters, followed by an explanation of the changes made to the game accordingly in chapter 6. Finally, in chapter 7 we conclude the results found and future work.

2

Related Work

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2.1 Cyberbullying

Modern technology is a major part of people's lives nowadays. Whether we are talking about household applications like programmable televisions, to hospital instruments with surgical precision, or even a gadget that allows us to have our entire lives in our hands (smartphones), technology is everywhere. But with the benefits of modern technology also come the consequences. With the advances in communication, social media and the internet now play a huge role in everyday life, with each new generation of people being introduced to it sooner than the one before them.

A problem that has been extensively studied and still plagues society currently is bullying, which can be defined as "a type of aggression, specifically behaviour by an individual or group that is intended to hurt someone" [5] [6], and that "involves a dynamic interaction between the perpetrator and the victim" [7]. From this problem and the rapid advancement of communication-based technology, cyberbullying emerged, which we can define as "wilful and repeated harm inflicted through the use of computers, cell phones and other electronic devices" [8]. Studies [9] show that cyberbullying and traditional bullying (which we will call "bullying" from now on) have some similarities, but at the same time differ in some respects. When talking about bullying, it happens in the real world. Bullying is limited to a shared physical space between the victim and the perpetrator, and it can take the form of psychological harm (through verbal or visual abuse) or physical harm (through physical abuse). Cyberbullying on the other hand can be done over the internet and communication-based devices, which means it has no limit in its range and can be done at any time as long as the bully has access to a device as well. Furthermore, since it happens over the internet, it is much harder to find and identify the culprit than when we're dealing with bullying. This also propagates another problem: the bully may not see how the victim reacts to the abuse, which can negatively impact their perception of their actions, and cause them to be crueler than their bullying equivalents. As well as that, a lot of the times teens may think they are just "joking", when in reality they are causing severe harm to others without knowing. For these reasons, cyberbullying has been claimed [10] to be a bigger problem than its traditional variant, and it has been growing over the past few years.

Both types of bullying have showed to have multiple consequences on children, one of which being self harm. In an interview study to a group of teenagers, one participant claimed to cut herself as a way to deal with the anxiety she felt due to the cyberbullying she was receiving [11]. The pain provided by the self harm made the impact of the bullying seem smaller for a short while. One other reason why a child might harm themselves is due to thinking they are the guilty party, instead of the victim. This is further propagated when they seek adult intervention and end up being met with indifference or questioning if they had done something to cause the bully's behaviour.

Further studies [2] show that cyberbullying may cause depression, social isolation, and in more extreme cases suicidal thoughts. Victims of cyberbullying are most of the times also victims of bullying,

which leads to greater feelings of rejection towards their classmates and peers, causing isolation (both online and offline) as a way to escape the attacks they're receiving. This isolation eventually expands to apply to other people besides the guilty ones, which in turn puts more stress on the victim's mental health, causing an endless cycle of anxiety and depression. These habits when left unchecked can persist throughout the childhood, hindering the emotional growth of the student, and at the same time harming their academic performance [12].

Children that fall victim to any of the 2 types of bullying may not always seek help from an adult. In these cases, it is up to the adults themselves to look out for any behavioural changes that might indicate something is not right with said child. Teachers specially, play a big role in this; children roughly spend one third of their day at school, with the other two thirds at home, but for most of that time they are not in contact with their parents due to work or being asleep. On top of that, school is a place where children act more freely, since they are surrounded by similar peers and like-minded individuals (students). On top of that, considering most bullying activities happen in educational facilities, it is much easier for a teacher to intervene in these situations than for a parent.

2.2 Bystander Effect

The focus in bullying situations however should not be only on the victims and the abuser. There is another part of the problem that is sometimes forgotten: bystanders. Many times in a bullying scenario, there are spectators that watch what transpires, but decide not to intervene. This can be for a multitude of factors, from fear of consequences, respect to the abuser, or in some cases even indifference to the situation. This is a heavily studied phenomenon known as the bystander effect [4].

A bystander in a bullying situation can be defined as someone who witnesses the abuse or has knowledge of it. This is more common than what might appear, with around 80 percent of bullying cases having at least 1 bystander present [13]. Bystanders can be sorted into 4 categories [14]:

1. Outsiders - those who witness the situation but decide not to intervene
2. Defenders - those who actively intervene, both directly or indirectly
3. Reinforcers - those support the abuser and encourage the abuse
4. Assistants - those who side with the abuser and join them in the abuse

There may exist multiple reasons behind a bystander not intervening in a bullying situation. Most of them are correlated to the bully: a bystander might be afraid of making the situation worse, or to cause a worse reaction from the abuser; many bystanders also see the situation as a warning of what might happen to them if they mess with the bully; and other times, even though they know the act of bullying is

wrong, they are unsure of how to deal with the situation. This last one is propagated by lack of guidance in dealing with bullying situations.

One specific type of bystander we want to focus on are teachers. Considering most bullying and cyberbullying cases happen on educational premises and schools for children and teenagers, teachers play an important part in guiding students to learn about these situations. Schools themselves can implement learning programs, or teachers can talk about the subject during class, providing strategies and a better understanding of the issue. Furthermore, besides being role models for the students, teachers should also be able to intervene when they detect something is amiss. Many times, as reported by students, teachers do not punish the supposed bully [15]; this is mostly due to a lack of certainty on the part of the teacher for who the guilty party really is, raised by a lack of understanding of how to properly assess and proceed in these cases.

2.3 Serious Games

Video games typically have one major purpose: to entertain the user. Generally speaking, most games consist of reaching an objective, and the player must discover how to complete it. There are multiple types of games, like racing, strategy, and action, and although they can have extremely different gameplay elements, they all have the same final goal to entertain the player.

A subgenre of games called Serious Games, specifically those that promote behaviour change, however, are ones that are considered to have a primary purpose other than entertainment; usually to teach the user about a certain social/moral topic or to incentivize behaviour change. They are still considered games, and have the same gameplay elements as traditional video games, but their main objective is to promote learning behaviour for the player.

Although the focus of these serious games is the educational content they provide the user, the gameplay features are just as important as for their traditional counterparts. A serious game with a superficial design or lacking interesting mechanics can end up creating a lack luster game, which in turn harms the user's experience and potentially the intended results. At that point, it's no longer a serious game, but instead a flawed interactive informative program. Therefore, an in-depth analysis of the most common and successful mechanics in serious games is mandatory for our project.

In a recent study [16], a team of researchers produced a compilation of serious games related with the prevention and detection of bullying and cyberbullying, totalling 33 games. From their analysis, we can ascertain the top 5 most common mechanics (the document in question did not specify a definition for each mechanic, and as such, personal interpretation was made for some of these):

1. Choices - to give the player multiple options to choose from and different paths to pick
2. Dialogues - to converse and interact with NPCs through dialogue based communication

3. Adventure - to present the game in a more story based, plot driven way, with more gamified elements
4. Scenarios - to present the player with specific situations or events where they can interact with the world or other characters
5. Exploration - to have a game space where the player can move around, not being confined to a single room or game screen

Besides the most common mechanics, they also analysed the goals of each game, and while they came up with a varied list (12 total), three in particular were of interest for our project:

1. Teaching strategies to combat the problem
2. Teaching knowledge about bullying
3. Teaching how to identify bullying situations

Other common goals included: raising awareness to the problem; being a teaching tool for teachers to use in class; creating empathy with victims; teaching safe use of Internet and social networks.

For the purpose of our project, we will base our goals and adapt them to be more focused on cyberbullying as opposed to bullying. Something to note is the type of problem the games dealt with: about 3/5 of the collection focused on bullying, 1/5 on cyberbullying, and the remainder on both problems. This is somewhat expected, since cyberbullying is derived from traditional bullying, and the latter has existed and has been researched to greater lengths for a longer period of time. On the other hand, considering the overwhelming presence of cyberbullying activities in the current era, there should exist more games to deal with that specifically.

One other factor that should be mentioned is the target audience of these games. As expected, as most cyberbullying situations happen between students, and, most other educational programs are meant for that demographic specifically, the games were mostly targeted at children and teenagers, dealing with bullying. For the few games that were targeted at teachers, only one of them dealt with cyberbullying together with bullying, and only one of them was a video game, with the others being either simulations or virtual environments. This reveals a gap that we intend to fill with our project, as it is targeted at teachers.

In terms of evaluation and validation, most games were accompanied by testing experiments with users playing the game in a single session (90% of experiments). They also included questionnaires, specifically: the completion of a questionnaire after playing the game (40% of experiments); completion of questionnaires before and after playing (35% of experiments); completion of follow-up questionnaires, interviews, and voice/video recordings (the remaining 25% of experiments). In our case, our intention

with the complete version of the game is to conduct a more longitudinal study, over the course of multiple months, where the goal is to test and see how the full game performs as a formation tool part of the project, and how it compares to other tools currently used.

2.4 Storytelling

An essential part of a serious game is storytelling. Besides the typical informational content they can provide, a serious game also enables the user to still feel like they are playing a video game, even though it's main objective is to educate and inform the user, in addition to providing entertainment. As such, a game with a rich narrative structure can improve the player's experience while playing the game, as well as presenting the "serious" concepts in a more approachable and immersive way.

On the contrary, a game with low to none narrative presence might end up harming the experience the game provides the player, sometimes leading to an incoherent game if its message depends on the story, or one whose immersion is hindered by its own narrative structure, which can influence the results in a negative way. Although a game might still be compelling without a narrative, a game with a bad narrative pushes away users. Therefore, when making our game, it is important to consider this dimension of play as a way to boost immersion by giving the player a story to discover and explore.

In terms of definition, we can divide the storytelling component of a game in three parts [17]:

1. Narrative - the way the story is told
2. Story - the temporal sequence of events
3. Plot - the causal structure of events

When properly pieced together, these 3 concepts can make a compelling story that captivates the user. Depending on how one writes it, there can be many variations in the type of storytelling that is achieved; one of the most widely used is known as Freytag's Pyramid (see Figure 2.1), and can be divided into 5 parts:

1. Exposition - the beginning of the story; the world and the characters are introduced; it can range from an extremely complex setting, mimicking the magnitude of the real world, or it can be a shallow perspective, in which case it should be supported by more intricate characters or events; it should end with the introduction of the problem or events that the characters will face in their journey
2. Rising Action - the events or problems the characters must face and overcome; it can explore the conflict in the story to advance the plot, and/or develop the backstory; it should rise the tension, prepare for the climax and setup its aftermath

3. Climax - the turning point where the characters confront the problem; it can be a short burst of action, or a more lengthy conflict with tension at its peak; it should provide an emotional outcome
4. Falling Action - the aftermath of the climax; it can present other new conflicts as a consequence of the climax, as well as showing the reactions of the characters to how the story unfolds, but overall stabilizing the state of events; it must compel the reader to reach the resolution
5. Resolution - the end of the story, where the problem is typically solved; the story concludes, with both the hero and villain dying or living, the state of the world changing, or a more common one with the protagonist learning from their mistakes throughout the journey and trying to correct the past; it can leave a message for the reader to think about even after finishing the story

This paradigm was imagined by Gustav Freytag in the 19th century, and it is still widely used in media such as video games and movies. This story arc was intended to make the audience appreciate the character on a deeper level, by sympathizing with them and understanding the difficulties and trials the character had to face in their story.

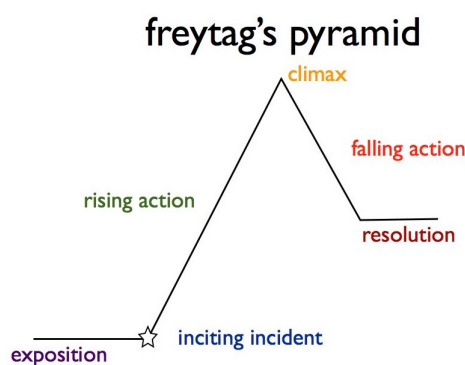


Figure 2.1: Freytag's pyramid. The inciting incident represents the turning point in which tension begins to rise.

Besides the protagonist and the antagonist, the full cast of characters are one of the most important parts of the story. They progress and outline the development of the story, through their actions and their reactions. A good narrative has strong characters with conflict and drama in between. One of the ways to achieve this is by using already defined archetypes. We can find examples of these in most mainstream media, with one more obvious example being the classic trope: hero protagonist is good, villain antagonist is bad. However, we can also have more complex archetypes, such as the ones proposed by Joseph Campbell [18]:

1. Ally - the right hand of the hero; helps them get through the hurdles in the adventure
2. Herald - the bringer of news and changes to the world; they trigger the adventure
3. Hero - the protagonist to whom the audience relates to and supports

4. Guardian - the gatekeeper of the adventure; tests the hero's resolve and prowess
5. Mentor - the teacher of the protagonist; guides them through the world until they are no longer needed
6. Shadow - the villain of the story; they stand against the protagonist, sometimes being a mirrored version of them
7. Shapeshifter - a wild card; can sometimes be an ally and other times an enemy; creates interesting interactions and relations between the characters
8. Trickster - the humour character; provides breathing room when the mood is off; offers a different perspective to situations

When applying these storytelling concepts to serious games, we get characters that are effective at portraying specific human traits we want the player to immediately recognize. Designing personalities like this produces fleshed out characters, which boosts the gameplay experience, while still being effective in terms of time investment.

Although the research was done and presented for Storytelling, the overall impact it had on the development of the game was minimal. This was due to the characters being already created beforehand, each with a different personality and actions to do, as well as the storyline for the game being largely driven by the Te@ch4SocialGood team.

2.5 Com@Viver

Com@Viver is a serious game created for students to improve bystander behaviour in cyberbullying situations [19] [20]. It is meant to be played by 3 users at the same time in the same machine, for 5 different sessions (the first being an introduction to the game mechanics). The players play in the role of students in a class where a field trip is being organized, and their objective is to be on the winning team to go on said trip.

The game mimics a Social Network Site, where the players can interact with the posts of other students, and the aim of the game is for the users to identify the cyberbullying scenarios that occur during the game, and to analyse them (see Figure 2.2). At the end of each session a voting takes place, in which the team to go on the trip is elected. The players will get more or less votes from the remaining students depending on the actions they take (positive behaviour is rewarded; negative behaviour is penalized). If they get the most votes, they are the chosen team for the field trip.

The game is populated by 12 Autonomous Agents that form the other 4 groups, and they can comment and post on the network (see Figure 2.3). Each agent has an avatar picture, and a backstory to

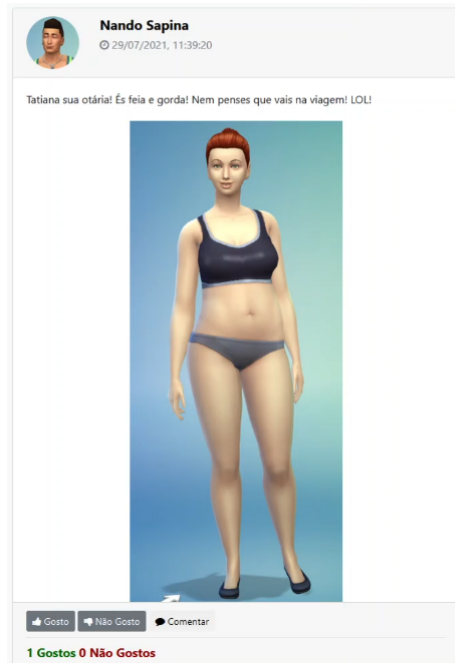


Figure 2.2: Cyberbullying example post. Text translation: “Tatiana you sucker! You’re ugly and fat! Don’t even think you’re going on the trip! LOL!”

immerse the player and to provide a degree of realism and attachment. Some agents play as the victim, some as bystanders, and others as the bullies, while the player is purely a bystander. This makes it so the game offers a realistic simulation of how a social media network between students operates, and how as a bystander the player can influence the actions of other students.

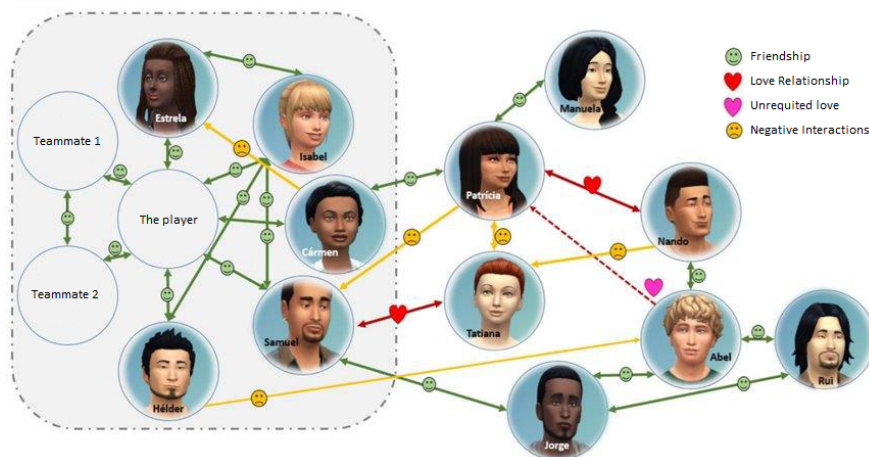


Figure 2.3: ComViver’s Social Network

In terms of the scenarios of the game, they revolve around the bullying of a specific student, and depending on the actions of the player, it can grow in size, or switch focus and cause disarray between multiple students. As an observer, the player does not have direct impact on the agents’ actions, but

they can influence them through the choices they make in the dialogue with the characters.

Com@Viver was first released back in 2018, and updated in 2020 with a new Artificial Intelligence for the agents using the FAtiMA Toolkit emotional engine. This engine provided the agents with more social and emotional intelligence, to further provide immersion and realism to the game. Both sets of tests to the game were done in public portuguese schools. In the most recent iteration, the tests were focused more on the interaction the players had with the artificial intelligence agents.

From their testing results [19], it was shown that players who noticed positive reactions from the agents when doing specific actions were more inclined to make more of those positive actions in later sessions. On top of that, players that were victorious in the game (81.7%) were more inclined to believe they had impacted the actions of the agents that played the roles of cyberbullies, as well as believing to have had freedom of choice in the game.

In the other iteration [20], the focus was in the experience of the player playing the game. There was a significant pro-social behaviour change in the players, specifically when comparing the first session with the other three. After playing through the tutorial session and the first game session, students interacted more frequently with the posts, as well as taking a more active role in the cyberbullying scenarios. They also displayed more attention to the artificial intelligence agents, which is revealed in the increase in score from session 2 onward. Players that had higher scores or showed more pro-social behaviour, tended to think the game was more effective at its objectives, as well as liking it and finding it to be a good experience.

2.6 Conectado

Conectado is a serious game created for students, with the aim of raising awareness to the consequences of bullying and cyberbullying on children [21]. The player controls a student that has just enrolled in a school, and must go to classes every day. The perspective is that of a classic 2D “point and click” game, where the player interacts with the environment by only using the mouse (see Figure 2.4).

In the game, the player starts off each day at their home, and must go to school and attend their classes. They can interact with characters, like their parents or their classmates through dialogue, and depending on the interactions, the player can increase or decrease their relationship level (see Figure 2.5), albeit with some limitations due to how the story is presented (you cannot get a positive relationship with the bully for example). These interactions however are somewhat limited, with a small amount of dialogue choices, and sometimes locked until a specific event has been completed, which can reduce the feeling of agency¹ in the player. In school, there is a pair of bullies that make life hard for the main character by bullying them on school and in a social network online. The objective of the game is to find

¹The degree to which a player is able to cause significant change in a game world



Figure 2.4: Conectado's perspective. The player is hovering the cursor over the door, which prompts it open and able to interact with it to change rooms.

a solution to stop the bullies from abusing you and anyone else.

One of the features of this game that distinguishes it from many others is the fact that the user plays the role of the victim, as opposed to the usual bystander role. This provides a way for the user to experience the sensation of being a victim of cyberbullying, which can help create empathy towards victims and by consequence diminish the issue of the already mentioned bystander effect.

Conectado was tested with both students and teachers, the former to evaluate if the game had an impact on the mindset of users, and the later to verify its feasibility as a teaching tool to be used in class as part of the education of students. Both tests were met with positive results, with students claiming to have learnt concepts and behaviour related to cyberbullying, and teachers supporting the use of the game in their classrooms. It was made available for free after testing was finished, which unlike most other cyberbullying serious games, made it a valuable research subject.

2.7 Other games

We opted to focus our analysis on the two games mentioned above. The reason for this was the availability and research behind the remaining games that were found during the research process. Unfortunately, most games were unavailable to the public or behind a pay wall, and the ones that were not in this condition were either very old or did not have sufficient research and results to support their effectiveness.

Regarding the two games we chose, Com@Viver has extensive research behind it and acts as a

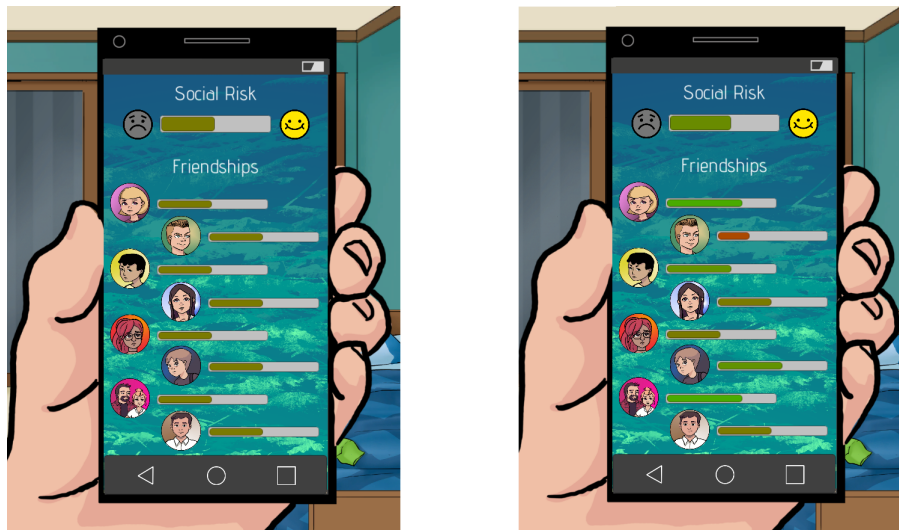


Figure 2.5: Conectado's social levels. On the left, the player begins with the base values for each relationship. On the right, after the first day of school, the player has increased/decreased some of them.

sturdy foundation for the game, both in content and in the development process; on the other hand, Conectado was proven to be very effective as a story driven game in the visual novel style, from which was taken a big inspiration when constructing the gameplay mechanics of our game.

2.8 Discussion

As previously stated, cyberbullying is a growing problem in today's society, heightened by the technological boom in the past decades, with a big percentage of students around the globe being victims of this issue at least once in their school life [1]. There have been multiple methods to try to help and improve on the problem, one of those being serious games, which have had successful results. But, in the context of serious games for teachers, who make up an important part in the life of students, both the industry and the teachers themselves are lacking adequate examples to learn from. Specifically, most serious games related with cyberbullying are oriented for students, with the intent of preventing them from starting and continuing this issue. With this in mind, we intend our game to provide an experience tailored for teachers and educators, taking into consideration the already established techniques which have been proved to work and adapting them to suit our needs, while at the same time provide an answer to the question: can we adapt a children focused game setting and turn it into an adult (in this case teacher specifically) focused game?

3

Concept

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The initial concept of the game was to create a serious game with a game audience for teachers and educators (adults), by adapting a serious game created for children Com@Viver. However, due to how the children focused game worked, some changes had to be made, and as such, this idea was altered to create instead a standalone game, while still maintaining a connection to the original by incorporating it partially in the game design and taking into consideration its story.

After some deliberation on how to change the metaphor of playing as a student while being an adult in real life, the idea of making the game centered around a teacher in a school as opposed to playing as a single/group of students came to light, which ended up being the chosen design. In a way, it kept the purpose of the original more intact (players were students in the first game, players would be adults in this one), and it was more suited to the nature of the players, since we were targeting adult educators, and being in the role of a professor would provide them a more realistic approach, in addition to a higher degree of familiarity between the player and the character they would play as. This, however, did not change the focus of the game being on the students; it merely added another layer of complexion on top of the one predefined by the children's game.

From there, the idea further developed by drawing inspiration from Conectado, specifically its game-play elements/narrative style. This transformed the concept from a SNS (Social Network Site) type game into a visual novel. These types of games are semi-interactive in principle, offering an experience less focused on active gameplay elements, and focusing more on the story contents. Usually, the player's interaction is limited to mouse clicks, through which they change the game space areas, the lines of dialogue of characters, and the menus, akin to flipping the pages of a book.

For the actual concept of the game, the player would be in a school environment, with students to interact with, as well as having some tasks related to the teacher occupation. These students would have conversations amongst themselves or with the player, and the characters that made up these students would be the ones from Com@Viver. Just like in Com@Viver, a cyberbullying situation would arise amidst the school, and the player would have the objective to find it and deal with it accordingly.

With this new concept, marrying the style of Conectado with the story of Com@Viver to make a new game for a new audience, we had to take special care when drafting our requirements and our design intentions for the game, as will be explained in detail in the sections below.

3.1 Requirements

Taking inspiration from Com@Viver, some of the requirements remained the same, while still removing some and adding new ones that we thought were more adequate due to the adult targeted nature of the game:

1. Com@Viver story - Arguably the most important aspect of the game, it should make a faithful

representation of the Com@Viver scenarios and dialogue, adapted to the new visual novel style of gameplay. The idea is to give a new perspective of the same story.

2. The player is a bystander - Just like Com@Viver, where the player was a student who observed the situations, the player now being a teacher could have some more authority and influence on the situations; however, this largely changes the meaning and objective of the game, and as such, the player will only take the role of a bystander. This opposes the strategy used in Conectado, where the player was in the role of the victim.
3. The player should have agency - One of the main objectives is to give the player the freedom of choice between the different actions he can take. As such, we do not want to force the player into any specific action or path, even if the game follows a linear story and there are specific story markers through which the player will always experience. This matches with the “Choices” and “Adventure” mechanics present in other serious games, and will be discussed further below in the Design section.
4. The game world should have depth - In Com@Viver, the player was only allowed to interact in the SNS, never visiting an actual game space. In line with the “Exploration” mechanic, the world space will be that of an entire school, and the player will be able to explore its entirety. Some interactions will be locked in specific spaces, and some objectives will require the player to discover specific information.
5. The game needs to create reflection moments - As with Com@Viver, the game should present more introspective moments for the player to reflect upon his actions, and it should also present feedback on the decisions the player makes during and after each session.

3.2 Design

The idea was to develop a visual novel style game, where the player takes on the role of a teacher in a school where there are multiple students present at any given time in the school. These students are the same 12 students from Com@Viver, and their interactions respect the already defined relations in the previous game. In terms of story content, we had 2 choices: recreate a new story based on Com@Viver, which could be a side story or a prologue/epilogue of the situations; or we could adapt the actual Com@Viver situations. We chose the latter option. This way, we could integrate the complete, already validated story of Com@Viver into our game, and add some extra details/events, in a way making it more established in a world (due to not being fully online), and still retaining its original feel.

Just like Com@Viver, the game includes 4 sessions. Each session in the game is represented by a school day. In terms of narrative, unbeknownst to the player, the Social Network Site situations from

Com@Viver happen behind the scenes before that given school day, and then, during that day, the player sees signs and references that could point to a potential cyberbullying situation. This way, we remained completely faithful to the already proven and established Com@Viver stories, while still presenting its contents in a feasible way to the player.

In addition to being able to observe and interact with the students, the player also has tasks to complete related to their teaching occupation. These can range from writing an e-mail for a colleague, to helping a student with his homework, and they serve as a bonus objective besides the bullying situations. The main goal with the tasks is to simulate the real life of a teacher, where on top of dealing with the students they're also working in multiple things at the same time, giving the player some more pressure and agency.

Each session/day in the game is set around 3 breaks (15 minutes in-game time), with a class (90 minutes in-game time) after the first two, and a meeting (2 hours in-game time) after the final one. During the breaks, the player can complete their tasks or interact with the students, where as in the classes/meetings they are in a non-playable area (the actual class or meeting aren't shown, but the player knows it happened), where they might just observe some conversations between the students.

From this initial design concept, we then structured the most notable elements of the game and labeled the following 3 areas of the game as our pillars of design:

1. **Realistic Characters** - The game area is represented by a school populated by students. Each student plays a different role in the story, as created in Com@Viver. The player can semi-interact with the students (one way interaction; the students talk amongst themselves and the player listens, or when speaking to them the player has no choices for answers). This relates to how we represent the player in the game, as a bystander. The player follows the silent protagonist trope, which helps with the bystander role we impose on them. By listening to the students, the player can gain information about or witness a more serious situation amongst them, which in turn can help them deal with said situations.
2. **Time Management** - In the game, the player can listen to students, explore the school, and complete tasks. All of these different actions cost different amounts of time. A player who concentrates on only completing tasks might miss an important piece of information that could help them with the cyberbullying situations that occur in the game. On the other hand, a player might tunnel vision into exploring the school and listening to the students, while disregarding completely their school obligations. Time is the main resource of the game, and the player must actively pay attention to it and make their decisions taking it into consideration.
3. **Feedback and Reflection** - In line with the design choice of reflection moments present in Com@Viver, these moments are crucial for the educational/instructive aspect of the game. The player should

be able to access the feedback on their choices during the game, and they should have moments of reflection after experiencing the more serious parts of the situations. In addition, this allows for outside investigators to analyse how the player acts when faced with the situations of the game.

After drafting the concept and the main elements that would make up the game, we proceeded with the creation and development of the prototype.

4

Prototype

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In this chapter, we will describe the architecture and the development process, followed by an explanation of all the game elements that make up the game, as well as presenting the gameplay loop.

4.1 Architecture

Pro(f)Social was designed as a visual novel type game, and to that end, the framework chosen to develop the game was Ren'Py¹. Ren'Py is a visual novel engine that is easy to use and enables the creation of interactive stories. Originally, we were split between using this engine or the Unity² engine. Although Unity was a more generic engine, and widely known in the video game industry, we opted for Ren'Py due to it being an engine created specifically for the creation of visual novels, therefore saving a lot of development time. It also came with prebuilt support for all platforms, which was revealed to be a major advantage, due to the need to present the game to multiple people during its development, all with different types of computers, as described in the development process. This engine is written in Python, so it supports everything that the language offers, while at the same time offering new implementations specific to the Ren'Py engine, such as Screen Language and Animation and Transformation Language (ATL), which provides an even greater ease to use for the developers. The Python language also facilitates data gathering and tracing needed to register the game paths and choices the players make.



Figure 4.1: A typical game screen. In the background scene we have an image of the full view of the school (marked as red); there is a screen composed of a group of students talking, on the right side (marked as orange); there is a screen composed of 2 images, which are the menus to the left and the clock to the right (marked as yellow); and finally there is a screen composed of the entry ways in the current space, in this case being the 2 entries to the indoors (marked as pink).

In terms of implementation, we used a system of scenes and screens to display the images to the user. In a typical instance of the game, there is a scene, which is treated as the background of the room

¹<https://renpy.org/>

²<https://unity.com/>

the player is currently in. Adding to that, we used a list of screens (a type of interface), one for each room of the game, where we displayed the objects (doors, characters, etc.) as needed (see Figure 4.1). In terms of the system part, Ren'Py is script based and we use labels, which allows us to call or jump to specific parts of the program directly. We divided each portion of the game (main, dialogues, rooms, scenes, tasks, etc.) in different files, and we interchange between all their labels during gameplay.

4.2 Development

Pro(f)Social was developed with an iterative process that involved 2 parts, one technical that would take care of the programming side of the game, and the other composed of a team of psychologists that would review it and provide feedback on changes to be made, as well as some insight and content that were outside the scope of expertise of the programming side. In terms of specifics, there were 8 iterations of prototypes over the course of the first 6 months of the development (see Figure 4.2), culminating in an on site test with a group of participants, which will be discussed in the Evaluation chapter further ahead.

This version included only the first session of the game (out of a total of 4), due to the aforementioned iterative process. The idea was to create a solid single session that we could then validate, and afterwards extrapolate that knowledge to create the remaining 3 sessions.

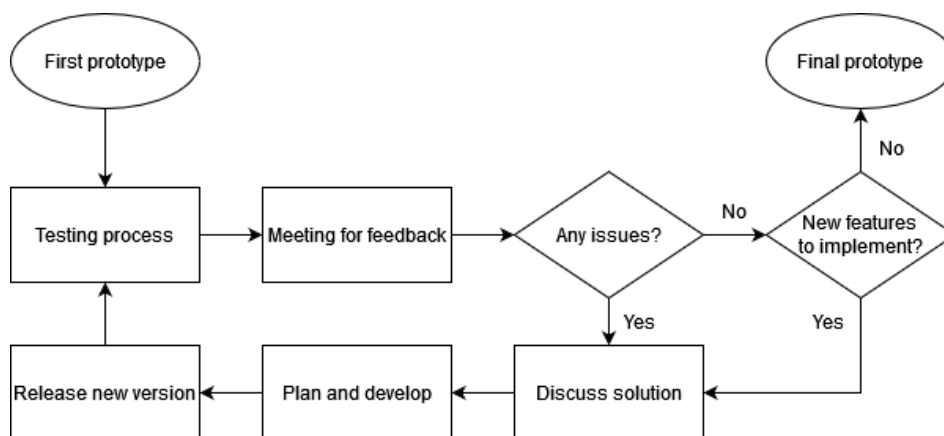


Figure 4.2: The development process.

4.3 Game Elements

As explained in the concept chapter, the game is composed of multiple key elements that added together create a realistic narrative of a teacher's day in a school. To best demonstrate this, we will divide and present all the elements and mechanics present in the initial prototype (which portrayed the first of four sessions of the entire game).

4.3.1 Setting

The player plays the role of a teacher in a small middle school, with a session representing a single school day. The game starts in the middle of a school year, with the player arriving at school during the morning, and acknowledging the fact that he heard rumors of some issues among some of the students. There are 12 students that appear at the school, and the player only has information on 6 of them, which correspond to the ones that belong to his class (the player is the class director of the 9th grade class A). During the day, the player goes through 2 classes and 1 meeting, with a 15 minutes break before each one (and a lunch break in between). During the breaks, the actual gameplay happens, and the player can interact with students, do tasks, and explore, as will be explained further ahead. During the classes, the player learns some information about the rumors circulating the school. The objective is to complete special tasks related to the rumors, and reach the end of the day with full knowledge of the situation, while still doing the tasks related to the teacher job.

4.3.2 Characters

The characters present in the game are the 12 students present in Com@Viver (see A.1 in Appendix). Their relationships and overall identity were kept the same, to ground the game in the reality setup by Com@Viver. This meant the characters were still split into the same 2 groups: the in-group students, which belong to the player's class, and the out-group students, which the player does not have much information about.

Visually, the avatars Com@Viver used were static photos of the characters, and we now needed a way to express different emotions with them. As such, we decided to remake the characters visually using software³ that allowed us to use different emotions for the characters. This way we could maintain the visual novel style of characters displaying different emotions depending on their mood in the conversation (see 4.3).



Figure 4.3: From left to right: Angry, Normal and Laughing emotions of the character Nando.

Using this tool, we created a set of emotions for each of the 12 students, composed of Normal, Annoyed, Angry, Disgust, Happy, Laughing and Sad, with some specific characters having an extra

³<https://charactercreator.org/>

emotion or two due to the dialogue requiring it. However, this tool had its limitations. Although it provided with a full body option for the characters, the poses were not what we were looking for. Instead, we decided on using silhouettes for the characters. The main reason for this was due to not finding a feasible way to create all 12 character bodies, maintaining a similar art style to the one used in the emotions. But, after testing the first few iterations of the game with the silhouettes, we found that the effect was not as off putting as we thought in the beginning, and it ended up making a good contrast with the background, as well as giving a bit more of mystery to the player about the students, as in, they had to listen and interact with the students to actually be able to see their facial expressions.

Each character is associated with a different color as well, which is represented by a name color when in dialogue, as well as in the clothes (for example Nando's color is dark blue). We also put the names on the silhouettes, so that the player would not be obligated to memorize who corresponded to each silhouette, but only the in-group characters had colors, with the out-group characters being greyed out.

4.3.3 World and Interface

The story takes place in a middle school, where the player can access 15 different locations, from multiple corridors and floors, to a library, a teachers room and some classrooms. The idea was to create a diverse enough school so that the player feels the ambience of an actual school, while at the same time making it a relatively small size to not overwhelm the player. Taking a look at figure 4.4, we can observe what a typical game state looks like:

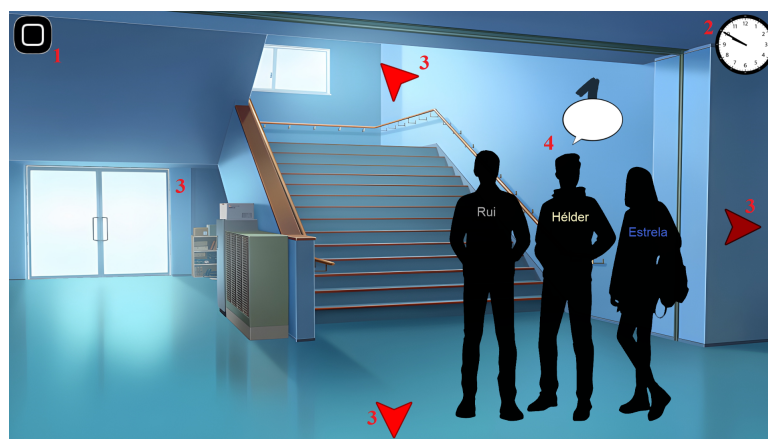


Figure 4.4: A school corridor with some students chatting amongst themselves.

1. The menu. This allows the player to access their task list, the map, their student list and the feedback, and is the tool that the player will use the most during the gameplay. We will explain each of these 4 items further ahead.

2. The clock. This represents the game time, and consequently, the amount of time the player has until their next class or meeting. Every break is 15 minutes long, and in this case, the break started at 9h45, which means the player has 10 minutes left before it ends.
3. The red arrows and the door. These represent the possible move actions the player can make. Entering a room or a new space is done by hovering the mouse over the corresponding door (the door is then highlighted just like in Figure 4.5), while movement between corridors is done through the red arrows. The rightmost arrow is shaded darker because it represents the direction we just came from.
4. A group of students. Throughout the school, multiple groups of students (sometimes a singular student) are spread out, and the player can click on them (see Figure 4.5) to hear dialogue between them, with each line read taking up time. The player can exit this dialogue anytime they want, or they can listen to the full conversation. The speech bubble represents the tone of the conversation, as well as the first person to talk in the dialogue. It can be a normal bubble to represent normal conversations, a spiky bubble to represent loud conversations, or a thought bubble that represents a student who isn't talking, but we can still interact with them to observe what they are doing.



Figure 4.5: The highlight effect when an object is interactable. Both the students and the door get highlighted in yellow when the mouse is hovered over each of them. The same applies to any menus or interface items, such as the movement arrows. Task related objects get a zoom effect instead of a yellow highlight.

Regarding the previously mentioned menu, when clicked, it shows 4 new menu buttons, each with a different function. This was done to reduce visual clutter, since having the 4 buttons showing all the time would take up some space on the screen at all times.

The first submenu is the task list, which shows the player the tasks they currently have to do before the end of the break. If the player does these tasks, they are marked as successful with a green check and text color, but if they don't complete the tasks, they are instead marked as failed with a red cross and text color. When a task status is updated (completed or failed), or a new task has been added to the list, the menu is highlighted in a red color. The tasks that relate to the cyberbullying situation have a button to manually conclude them (see Figure 4.6).

The second submenu is the map, which shows the player the blueprint of the current floor they are on. It is also interactable, and the player can switch between the floors to check where a specific room is located (see Figure 4.7).

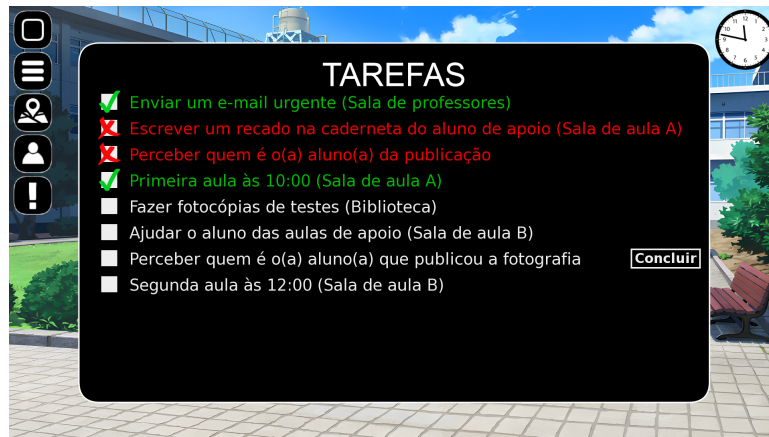


Figure 4.6: The task menu. White tasks are the current tasks, green are completed and red were failed. The 7th task is related to the situation so it has a complete button.

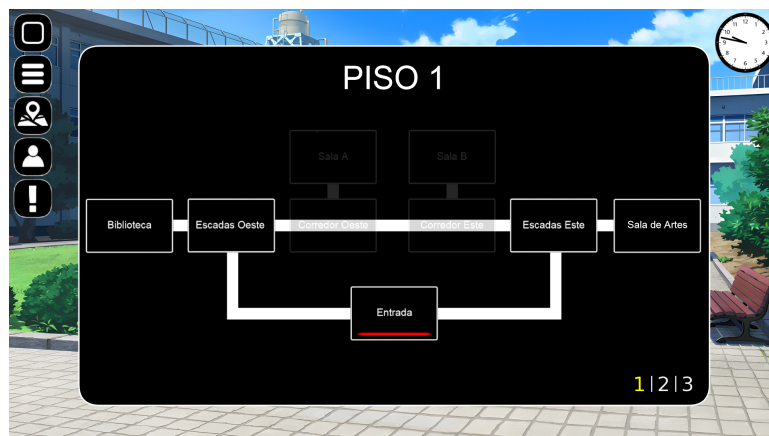


Figure 4.7: The map menu. It shows a blueprint of the current floor. By pressing the numbers on the bottom right, the player can alternate between the blueprints of each of the 3 floors.

The third submenu is the student list, which shows the player the 6 students that are on his class (the in-group). Due to how the story was made, the player is supposed to know these 6 students, and as such, we needed a way to easily check information about them. As such, the player can access this menu at any point to see who their students are and check some information about them (see Figure 4.8). The information that is presented updates during the game to reflect on some events that happen in the story.

The fourth submenu is the feedback area, which shows the player feedback on their choices during reflection moments and tasks related to cyberbullying. When a feedback is given to the player, the menu

is highlighted in a red color, similar to the task menu. This menu will be elaborated in a section further ahead (see Figure 4.9).

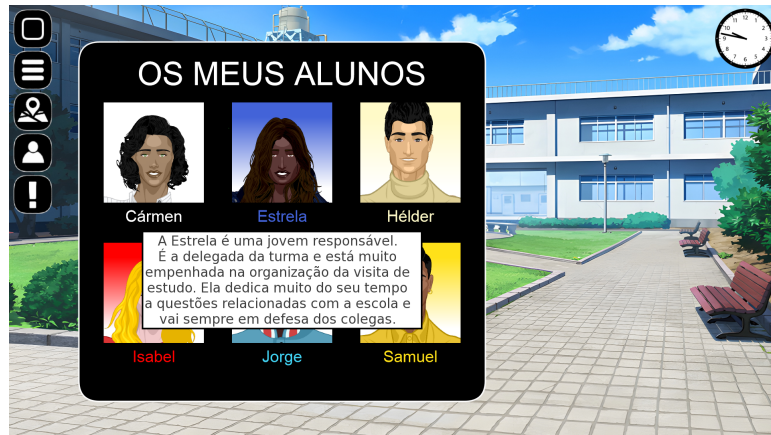


Figure 4.8: The student menu. It shows the 6 students that belong to the player's class. Hovering over the picture of a student shows a brief description of them.

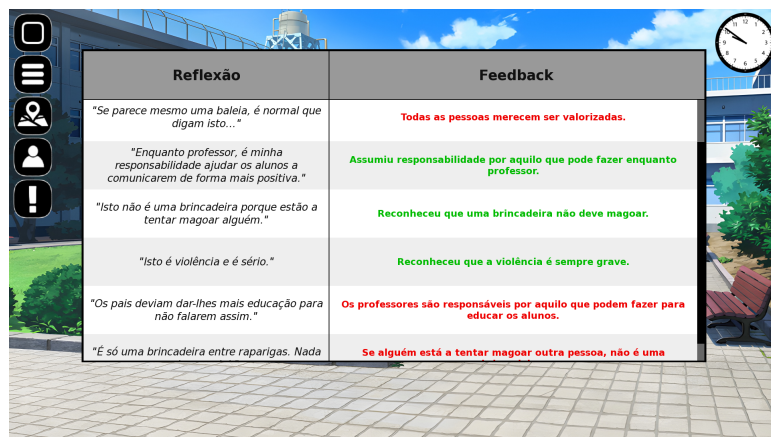


Figure 4.9: The feedback menu. It shows the feedback on the choices the player made during reflection moments and in the tasks related to cyberbullying situations.

4.3.4 Actions

A session in the game is composed of 3 breaks and 3 events, beginning with a break at the start of the day, and alternating between the 2. During the events, the player has no impact on the game, and purely spectates it (these can be a class, or a meeting). However, during the breaks, the player can make many different actions, with each action costing different amounts of time.

The most basic action is movement. As referenced before the player can move around the school by interacting with doors or the red arrows. Each time they move between 2 areas, some seconds are added to the clock time. This makes it so the player cannot be indefinitely roaming in the school even if

they're not completing any activities.

One of the major actions the player can do is complete tasks. During each of the breaks, the player has 4 tasks to complete. Two of them are normal tasks, which involve the player doing something related to their teaching job (sending an e-mail, helping a student with a question, etc.). One symbolizes what the player has to do after the break, like giving a class or attending a meeting; this type of task can be completed by the player at any time in the appropriate place, effectively ending the break, but it gets auto completed when the break time comes to an end. And the fourth one relates to the cyberbullying situation of the session. This last one requires the player to write down sentences related to the cyberbullying events, with information that they gathered throughout the breaks while interacting with the students. Tasks are completed by clicking on the objects corresponding to the task description, with the exception of the last type of task, which only requires the player to click on a button next to the task description.

The other action the player can do is to observe (and in some cases talk to) students. The player can click on a group of students and then listen to them converse. Each line of dialogue costs some time, and the player can leave the dialogue at any time (see Figure 4.10). We can classify the content of the dialogues in 3 categories: generic, distractor, and sign of alert.

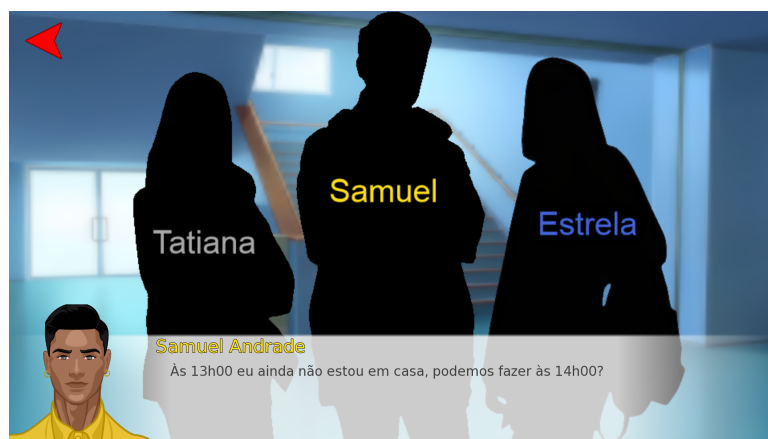


Figure 4.10: An example dialogue. The silhouettes of the characters participating in the conversation appear in the background. The face of the person speaking appears in full view, displaying their current emotion.

Generic dialogue, like the name implies, is when the students talk about mundane subjects (a TV show, a sport, what they did on the weekend, etc.). These represent the idle chat students have between themselves.

Distractor dialogue is meant as a dialogue that at first glance might imply there exists a problem or situation, but when the player gets all the information pertaining to that supposed situation, they realise it was just a misunderstanding. These were added so as to show the player that not everything is black and white, as in, if it's not mundane talk, then it's not automatically a cyberbullying situation. An example of this happens with one of the students, Jorge, who in some dialogues is mentioned to have been

missing some classes. By the last break of the day, the player finds that the student was simply gone on doctor's appointments, and there weren't any cyberbullying related motives.

Lastly, sign of alert dialogues are conversations that relate to the cyberbullying case of that session. They involve at least one of the characters related to the cyberbullying situation, and their intent is to give the player information about the current situation.

The number of dialogues for each category is roughly the same across the session. There are a few extra dialogues that are special in their nature, because the player is forced to observe them, independently of their choices. They represent the actual cyberbullying situations, and unlike all other dialogues, these are static in their position, meaning they always happen at a predetermined location. They have some other features, which we will go into detail in Subsection 4.3.6.

4.3.5 Populating Algorithm

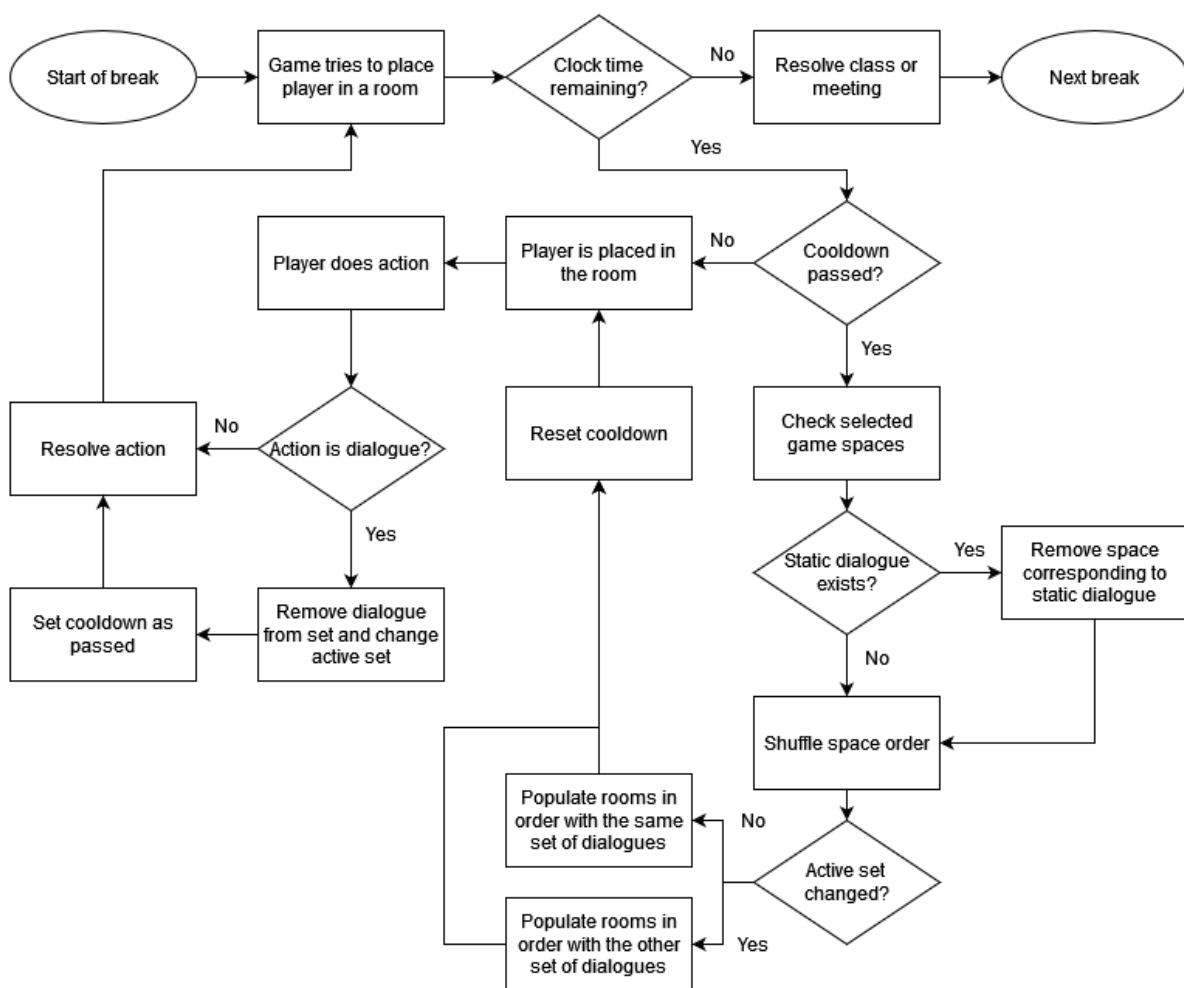


Figure 4.11: A diagram representing how the algorithm works.

During development, we stumbled upon a problem when designing the dialogues. We had to make sure every student only appeared in a single spot in the school at any time. Adding to that, we also had to create multiple dialogues for each student, and these dialogues should be made up of different groups so as to mimic how real life interactions happen (teenagers have multiple friends and tend to be in different groups), while removing the chance of the player repeating the same dialogue interaction. To solve this, we resorted to the use of an algorithm.

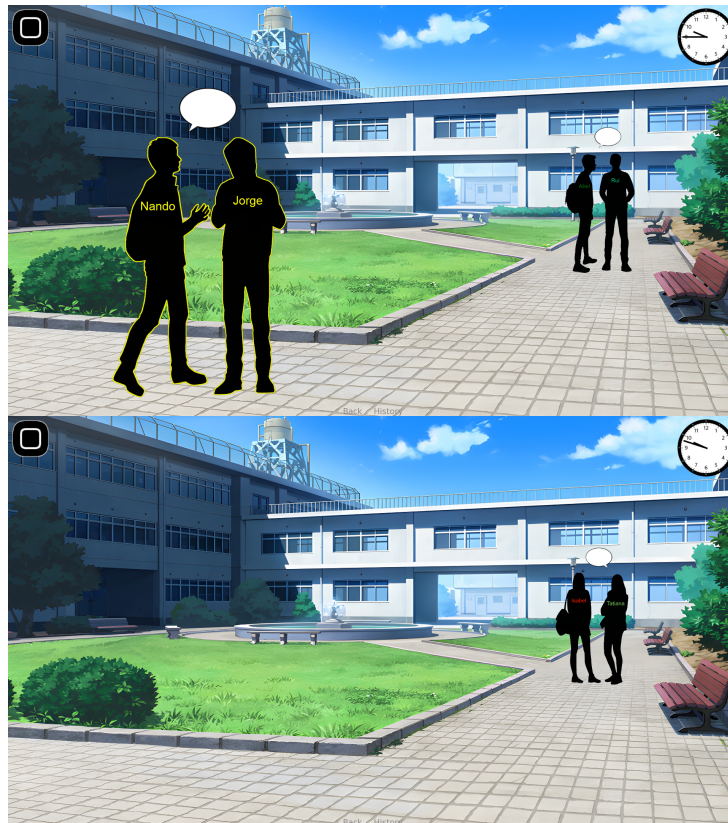


Figure 4.12: An example of the algorithm in action. After interacting with the students highlighted on the first image, the set of dialogue changes, and all the groups in the school are removed, being replaced by groups of the new set, as seen on the second image.

Firstly, 2 sets of dialogues were created for each break, with both sets having different groupings of the students with no repetitions (example: with 4 students [A, B, C, D], set 1 could have the groups [(A, B), (C,D)] and set 2 could have [(A, D), (B, C)]). During the game, at the start of each break, a set of dialogues is selected, and the school is populated by the groups of students (some areas aren't included in the pool of possible spaces, like for example the teachers room). These groups remain in those spaces until either 1 minute has passed in the in-game clock or the player interacted with the group. If 1 min passed, the current groups change spaces, so as to mimic movement in the school. Else, if the player interacts with a group, then after completing the dialogue, the current set changes to the other one, and the school is populated by these new groups of students (the group that was interacted

with is removed from the pool of the set it belonged to). This happens in a loop, until both sets have no more students, at which point the school is not populated anymore; or the break time ends and the player is sent to the next class or meeting (see Figures 4.11 and 4.12).

4.3.6 Reflection and Feedback

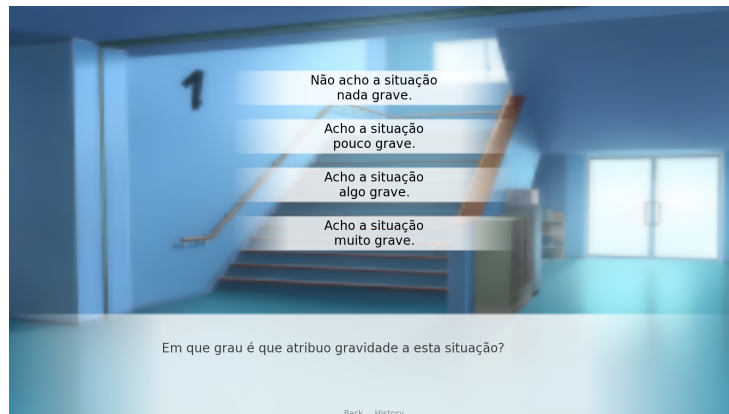


Figure 4.13: An example of the questions given to the player. They are always multiple choice answers.

During the course of the game, the player witnesses certain cyberbullying events through specific dialogues, which we call “situations” (in this first session there are 4 of them). These situations are exposition dialogues where some characters talk about the cyberbullying situation in a more direct manner. After witnessing one of these, the player is prompted with one or more questions (see A.2 in Appendix) regarding their interpretation of that situation (see Figure 4.13), as well as filling a questionnaire (in the last situation two) where they indicate their degree of agreement according to a list of sentences (see Figures 4.14 and 4.15). The questions have psychological components, being moral disengagement, empathy, emotional regulation, and intervention, with each of the situations taking one component.

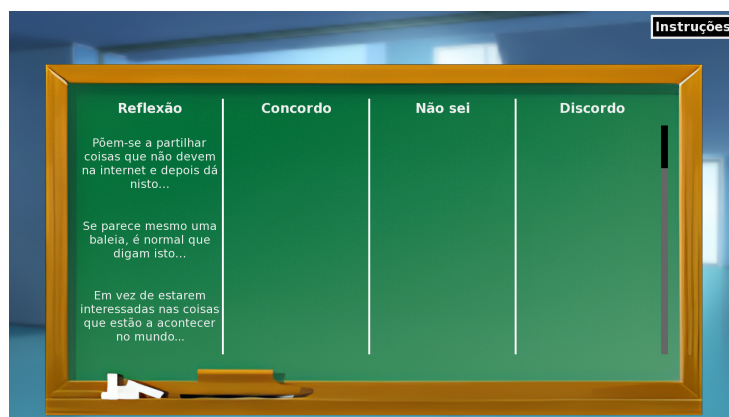


Figure 4.14: An example of the questionnaire. The player must drag the sentences on the first column (Reflection) to one of the 3 other columns (Agree, Don’t Know, Disagree)

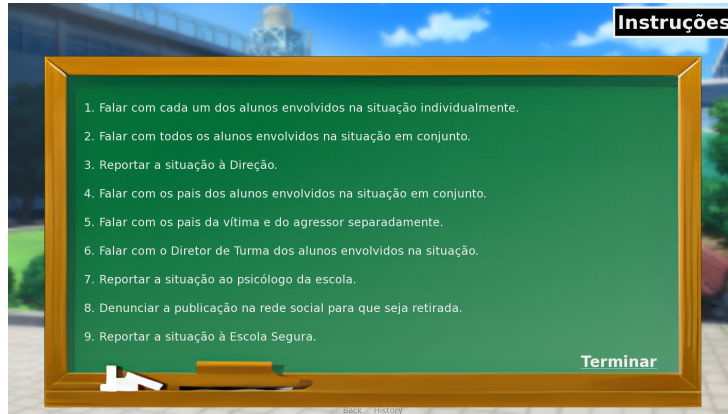


Figure 4.15: An example of the extra questionnaire present in the last situation (if the player chooses a specific option in the question beforehand). The player must order the sentences in regards to their importance.

The player can then check the feedback on their answers on these questionnaires. By accessing the feedback menu showed before (see prior Figure 4.9), they can see if their choices were adequate or not. This evaluation is based on if the player answered with any value of Agreeableness, and shows a green positive feedback when the player made an adequate choice, and a red negative feedback for the opposite. In addition to the feedback for the questionnaires, the player can receive feedback on the completion of the special tasks relates to the cyberbullying situation. If they complete the task, they get a green positive remark, and the opposite earns them a red negative remark. At the end of the game, after playing through the 3 breaks and the in-between classes/meeting, the player is shown the feedback screen, accompanied by a score meter (see Figure 4.16).

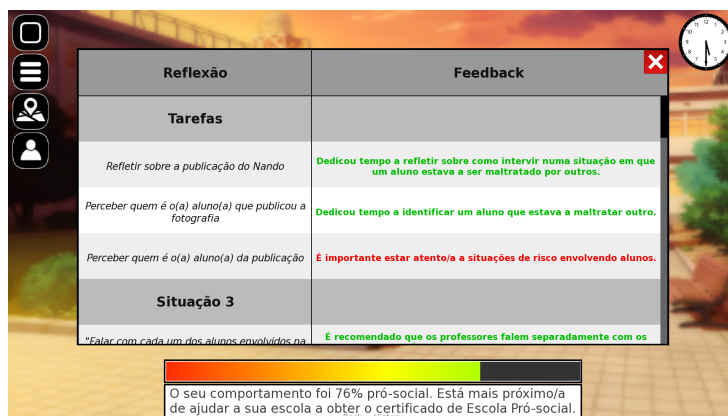


Figure 4.16: The end screen. The bigger the score, the more filled the meter will be. The player can also still access the other menus.

This score meter is calculated by attributing point values to each feedback remark, with each positive remark accounting for 1 point (2 if it was a task). It then is showed as a percentage of the total possible points that could have been acquired. Depending on the score, the player is met with a different feedback message.

4.3.7 Other features

Through the History button (located in the lower middle edge of the screen at all times), the player can check all dialogue lines that were presented up until that point. This feature was already given to us by the Ren'Py engine, with no need of coding on our part. The same goes for all the settings, and the save/load feature.

A simple logging feature was also implemented. This was used to record the actions of players for the facial validation (in detail in chapter 5). Every time a player interacted with a student, completed a task or started/completed a break, it would be registered to a file. This was done to have a quicker and easier way to compare the paths taken by the different players in the testing group, without needing to verify the entire recording.

4.4 Concluding Remarks

The main objective of this prototype was to create the first session (of four) of the game. Every session is to be mechanically identical to each other, and so the intent was to create a prototype with an iteration of all the different mechanics we intended to include. Testing and validating a complete version of the first session would allow us to ascertain the efficacy of all the game elements, changing them in accordance to the feedback we receive, and would allow us to later on extrapolate this knowledge and lessons learnt from finishing this first session to the remaining sessions of the game.

5

Evaluation

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To evaluate our solution, we performed a validation of the characters' design with a diverse audience to make sure players had the correct assessment of the emotions given the context in the game, and we performed a facial test of the prototype to guarantee the metaphor was adequate.

5.1 Emotion Recognition Validation

This validation was done to assess if the emotions portrayed in the game were realistic or if there were any outliers. The tool we used for the characters' faces provided only the facial expressions, and so, interpretation was made to select the appropriate expression for each of the emotions the character should be feeling at each point of the dialogue. The goal was to make sure a character's emotional status was not misinterpreted during the course of the game, given the context of the dialogue.

5.1.1 Participants

In this evaluation, there were 5 participants, 2 of which were males (40%), with 1 participant being a teenager, 2 being university students, and the remaining 2 being practicing teachers. Two of the participants had played the game before. All the participants volunteered to complete the required questionnaire, and in a single sitting.

5.1.2 Procedure

Each participant was given a questionnaire (see A.4 in Appendix) to complete and fill, alone. The questionnaire was composed of an introductory page, stating the purpose of the project and instructions. Following that, there were 12 videos of recorded gameplay of the game, specifically the dialogues belonging to the story. The objective was to watch the videos, and for each character present in the dialogue, the participant was to describe how they thought the character's emotions or how they were feeling throughout the dialogue. The participants were instructed to answer with few words or simple expressions describing emotions or emotional states. There was the option of giving the participants a list of words they could choose from as answers, but we opted to make the questions all open-ended to allow better expression from the participants. Depending on the participants, the questionnaire took on average 40 minutes to complete.

5.1.3 Results

The goal of this evaluation was to check if there was a possibility of a portion of users misinterpreting the emotions of a character for something that was completely different than what it was supposed to be. Since the participants answered with open answers, strict comparisons between the results are

hard to make. On top of that, the participants were asked to not simply identify a specific emotion on a character, but how the character seemed to feel in general during the interaction. However, overall, the results were very compatible with each other. The participants all agreed on the emotional valence¹ for all of the characters. There were some coinciding answers, like for example, Isabel in Video 3 and Patrícia in Video 9, where all users answered with a variation of the emotion "Concern". This was the most recognized emotion. One specific detail that was noted however was the fact that the participants were more accurate when describing the emotions of the characters if the characters changed their mood during the dialogue, than if they stayed with the same mood throughout. The exception to this was if the character showed happiness or a laughing face, where they identified it correctly, apart from two occurrences.

5.2 Prototype Validation

To validate the initial prototype and concept of the game, we ran a test with the target audience of the game (practicing teachers). The goal was to understand how teachers perceived the game in the context of the project, to identify potential problems or oversights in the game design, and to get feedback and suggestions on things to improve on the game. This test was done in collaboration with Faculdade de Psicologia da Universidade de Lisboa (FPUL), with the participants volunteering to play test the game in a single session.

5.2.1 Participants

In this evaluation, there were 6 participants, 5 of which were males (83%), with ages ranging from 33 to 67 years. The 6 participants were teachers at the Centro Qualifica de Odivelas, who taught students of grade between 7th-12th. Five participants claimed they played video games occasionally when they had the chance, with four of them having knowledge of visual novel games. The single participant that did not play video games was not aware of visual novel games as well. Only two of the participants had previously been a part of a cyberbullying formative session.

5.2.2 Procedure

In the 23rd of June, at 17h30, a 90 minute session composed of 3 members of the project team and 6 participants was organized. We began by presenting the Te@ach4SocialGood project, as well as give a brief introduction to the game and what its purpose was, and requesting consent to record the session. The participants were then split in 3 groups of two people, with each group being supervised by

¹Categorization of emotions. Example: happiness and joy have positive valence, fear and anger have negative valence.

a member of the project team. The participants began playing the first session of the game in pairs while being supervised (keeping intervention to the bare minimum, only when strictly necessary), with their gameplay screen being recorded, as well as their voices. At the end of the gameplay session, it was asked of the participants to each fill out an individual questionnaire (see A.5 in Appendix). Afterwards, a semi-open interview was done with all the participants present, via a group discussion, which was also voice recorded.

5.2.3 Results

The results that follow are derived from the questionnaire the participants filled, and the post game group discussion. We had five main categories through which we evaluated the session: the global game experience, the learning aspect, its adaptability as a tool for teachers, its usability, and its fidelity.

Beginning with the global game experience, all participants claimed the game was innovative, and that the quality of the game was comparable to other professional-level activities. They found the “detective” role of investigating the cyberbullying case through the dialogues a different (in a positive sense) way to present this problem.

Moving to the learning aspect, all users were able to identify the purpose of the game, and the message that we aimed to communicate. Although there was some issues with the completion of the cyberbullying related tasks due to an unclear user interface, the users still managed to grasp the key subjects of the situation.

Continuing to the adaptability, the participants claimed it to be a very useful formative tool, better even when paired with other activities, like a post game reflection and discussion with peers. The fact that it was a serious game as opposed to a less ludic tool, it provided a very different and unexplored dynamic that could perhaps be much more effective than its counterparts; it allowed a less demanding approach to the user, while still keeping the educative content present.

Concerning usability, in terms of graphics and the art direction, the response was very positive, mentioning appealing character and space designs. However, one of the main concerns that was brought up by everyone was that the game did not teach the player how to play, and so, in the first few minutes of the game session all participants spent some time testing the controls and figuring out what the objective of the game was. This was expected to a certain degree, as one of the objectives of the evaluation was to see how intuitive the game was for the players without any specific guidance, either from the game itself or from the supervisors. The interface had some visibility issues, with users missing some important info. In particular, some users were getting lost due to not knowing the paths they had taken before and where rooms were located; although there was a map they could check, they had no knowledge of this. Additionally, they had some difficulties identifying doors and entryways. Concerning the tasks, they understood how they worked and were able to complete some of them, with exception for the cyberbullying

related ones. This was due to the players not understanding these tasks had to be manually completed by clicking on a button in the task menu. In terms of the reflection moments, one of the groups had difficulty understanding the subject of the reflection, as in, if they were supposed to answer by thinking like a teacher or a student, applied to that situation. In addition to that, they found the option of a “Don’t know” in the blackboard sections to be an “escape” answer, due to being applicable to most phrases depending on the context. Also, in the ordering blackboard section, some users were confused on what they were supposed to do. One group mentioned that although one of the characters had mentioned a bathroom during one of their dialogues, they looked for it and they never found it (there isn’t one in the school layout). This brought some confusion because the character was mentioning they were going to a location that the player was unable to access, and they were given no specific reason. Some other observations that were made were more akin to grammatical errors and the sort, which do not need to be specified.

Moving on to fidelity, the users believed the overall story to be credible. Although the dialogues made use of slang and sometimes an aggressive tone, the consensus was that the way the students were presented was very realistic and in line with teenager behaviour. They also praised the different cultural/social status of the characters, making reference to the fact that the dialogues showed that the students had different aspirations and personalities, and that they weren’t bland and uninteresting. Some commentaries (in a non negative way) were made on the fact that usually a teacher does not gain so much information by listening to students, but at the same time, they understood that it was a game mechanic, and a way to present the metaphor. They also liked the fact that some dialogues were more intimate, and others more casual, and that it was successfully able to show the dynamics of the groups formed within the characters. On the negative side, they mentioned some characters were a bit stereotypical, which could cause an issue if it was a recurring theme (this specific feedback was expected because of the nature of the cyberbullying situation in the first session of the game). When it came to the tasks, they stated they were adequate, and properly conveyed what a teacher has to go through on a daily basis, and that the time generated pressure that resembled real life. However, some said this also came at a down side, because they got too concentrated on the tasks and lost focus on the situation. In relation to the reflection moments, the users felt that some of them were a bit over dramatic, since a teacher keeps composure most of the time, and that despite the situation, this wouldn’t make them feel as the game portrays the player’s feelings.

A major point that all the participants noted was the fact that the game only presented the player as the single teacher present in the story. They were left wondering what was the relationship of the player with the students, as it was never explicitly stated in the game. They also mentioned that usually, teachers speak with their colleagues or a representative of the school about these type of situations. Added to this, they felt like the students should talk with the player sometimes, or with a teacher in

general. A lot of the times, a teacher alone can't solve these cases, and the users stated that most of the times one needs to communicate with their peers or their superiors about the situations before doing anything about them.

One part that was not commented as much as we expected was the feedback menu. Although the groups were exposed to it at the end of the game, they did not interact with it during the play session. This was largely due to them not knowing it existed as a mechanic, as well as the interface not being clear when a new feedback was added. This made it difficult to evaluate what they thought of the mechanic, and how useful it was.

In regards to the questionnaire, there were valuable answers that were given. When asked about the most memorable aspects of the game, the most common topic was the dialogues (or a variation of such), followed by the graphics/realism. The remaining repeated answers were the tasks, the space navigation and the reflection moments. This coincided with our expectations and what was said in the discussion, with the participants thinking highly of the way the game and situations were presented, as well as the content of the dialogues. Associated with this question, when asked about the most positive part of the game (from the answers given), each participant answered within these previous five topics. However, for the negative part, they mentioned the use of slang (mentioned previously), the lack of a way of checking previous dialogues (which at the time of the session was not explained explicitly), and the lack of orientation in the school (which could be solved by using the map, but as stated before, they did not know of its existence).

For the specific suggestions of the game, there were 3 main ideas. The first was to correct typos and the occasional bugs that occurred during the session, which was something that was expected. The second was to give instructions to the player, how their objective and how to play the game, as well as making the game easier to grasp for users who were not so adjusted to video games. And the third was to provide a way for the player to speak with peers, such as other teacher characters, during the game, as opposed to only being able to interact with students.

5.3 Discussion

With these results, we gained a lot of insight on where the game was good, and where it could be improved. In particular, we divided the work to be done in 4 main aspects that needed to be changed: the lack of other teachers in the game, the way the feedback was presented, the definition of the social and professional status of the player in the school, and the lack of guidance from the game to teach the players how to actually play.

6

Final Version

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After the validation session with the teachers, the team gathered to discuss the changes to be made to the game. Our focus was divided between 3 areas: the teacher/peer interaction, the tutorial, and the quality of life improvements.

6.1 Teachers, Role and Feedback

One of the main aspects the participants commented on was the lack of other teachers in the school. Consequently, we added a new set of dialogues that appear in each break. They are composed of teachers instead of students. These dialogues are related to the cyberbullying situation, and give some extra information to the player, although since we still aimed to maintain the silent protagonist role, the player only listens to the conversation and does not interact with them. Currently, one dialogue for each break was made.

The players also weren't sure what their role was in the story. We decided to make the player be the class director of class A (9th grade, composed of the 6 in-group students). He would also be their director for the 2 years prior to the events of the game. This was the reason to have easy access to information on them, having teaching them for 2 years, but not the other students. On top of this, the player would also have a teacher colleague that they knew well. This colleague was named Professor João, and he was the class director of class B (also 9th grade, composed of the remaining 6 out-group students), as well as being the school coordinator. This eventually led us to decide for him to become a sort of mentor for the player.

Additionally, we also reworked the way the feedback worked. Previously, the player would have access to feedback on their decisions through a menu that just showed if their actions were correct or not (from a social point of view). We decided to change this since for one, the users did not give much attention to it due to the way the feedback was presented at the time, as well as the fact that there was no explanation as to how the player had access to the feedback, nor did they know whom had written that feedback. The fix for this was creating a dedicated section of the game to present the feedback to the player. We added a room to be a "Work office". From this office, Professor João would be present, and the player could speak with him to get the feedback about their actions. At the beginning of the first session the player is given a pamphlet that explains that the school is being evaluated for its pro-sociality, and that they can visit the office to get feedback for their actions.

6.2 Tutorial

To teach the player how the game works, we decided to create a session 0, a smaller session in length that introduced the player to all the mechanics of the game. To make it fit into the story, we designed

the session as a flashback to the player's first day at the school, 2 years prior to the events of the main game. In this session 0, the player is walked through every possible action they can do in the game.

The session starts with an introduction to the setting, followed by an explanation on how the clock and time work, how movement works, the map, the clicking mechanic of visual novels, and the tasks. The player is then oriented towards the Teachers' Room, where they meet Professor João. Here, we establish he is a more experienced professor, that was already in school before the player joined, and they've known each for some time. Also, since Professor João is the class director of class B (the out-group students), the player learns they can come talk to him to gain some information about these students. After this interaction, the player completes a task (learning the related mechanics in process) and is then asked to go to class. On the way, they come across students (belonging to the player's class), which introduce the player to the social network Com@Viver, and the leaving dialogue mechanics. At the end of the class, after noticing a student is missing, the player is instructed to look for her (which involves exploring the school and interacting with the student) to give her some notes, and then write down the justification for her missing (this works as a situation/investigative task). After completing the task, Professor João gives the player a questionnaire to fill about the first day at school (this simulates the reflection/feedback moments, without creating an actual situation). At the end of the session, the player is given a more detailed explanation on the objectives of the game.

6.3 Other design changes

Some other improvements were done to make the game more intuitive. Tasks that were related to the case were now called "investigation tasks". They differed to other tasks because they appeared in a blue text, and to complete them the player had to write their conclusions about the task in a notebook located in the teacher's room, as opposed to clicking on a button through the menu. We also enabled all the tasks to be visible from the first break, as opposed to slowly revealing them. This was done so the player had more freedom of choice when deciding when to do the tasks. Related to this, we changed the wording of some tasks to imply urgency or the lack of it.

We also improved on the interface, turning the red visual cues / highlights of notification into an animation as opposed to a static color change. We added X buttons to most of the menus, due to some confusion arising on how to close them. For the characters, we also changed the colors of the names on the silhouettes. Each character has a different name color attribute to them, but in the previous version only the in-group students had colored names on their silhouettes (the out-group students were greyed out). We decided to replace the in-group students names with warm colors, and the out-group students with cold colors, and to place the colors on the silhouettes as well (see Figure 6.1). We also changed the answer options of the blackboard questionnaires, to remove what participants claimed was an escape

answer (see Figure 6.2). Apart from these changes, we corrected some typos and bugs.



Figure 6.1: The new colors of the students.

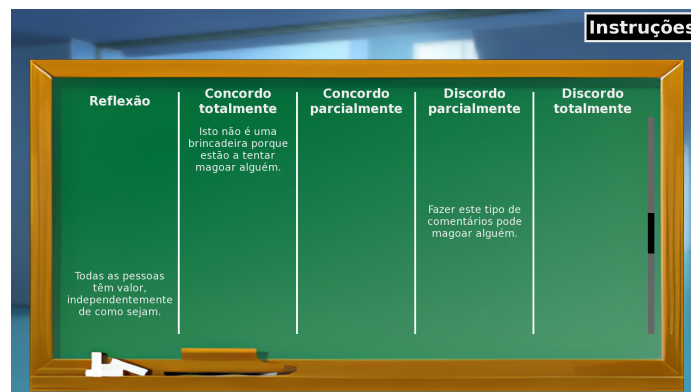


Figure 6.2: The new questionnaire. Instead of 3 columns (Agree, Don't Know, Disagree), we now have 4 columns (Total Agree, Partial Agree, Partial Disagree, Total Disagree).

6.4 Summary

Through these changes, we accomplished most of what the participants mentioned as negative about the prototype. The addition of Professor João as a known and trustworthy colleague, and the extra dialogues with other teachers provide more relatability in the teacher environment. Session 0 serves

both as a tutorial level for the players to learn the mechanics, as well as an introductory stage to the world and its setting.

Some specific changes were considered but not made, like for example, the use of less slang in the dialogues. Although the readability could become slightly better, our purpose with the use of slang was to make the dialogue realistic from a teenager's point of view. Another point that was brought up but not followed through was the fact that the player, as a teacher, shouldn't be able to listen to students dialogue about each other, at least without feeling uncomfortable. This, however, was a core design feature of the metaphor, which made it hard to change. Changing this mechanic would involve change the entire game altogether.

7

Conclusion

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7.1 Conclusions

We created this game as a learning tool for teachers to better understand and improve their behaviour when faced with cyberbullying situations. Pro(f)Social is a visual novel game that intends to fill a missing gap in serious game targeted at adults, specifically teachers, with the objective of sensitizing its players to cyberbullying situations and to teach them how to deal with them in their job.

The premise of the game has been validated with a group of teachers, having received positive feedback on how impactful it can be. The situations were considered plausible, and the users found the game to have the potential to be a great formation tool.

With the feedback we got from our test participants, we will be able to develop the remaining 3 sessions of the game in the best way possible, and contribute to the field with the creation of a fully fledged serious game for teachers.

7.2 Future Work

In terms of systems, the logging can be improved upon. Currently, tracing is slightly basic, registering the actions of the player in a local file. The aim is to create a more refined output, one that researchers can easily read, as well as exporting the information to a dedicated server site as opposed to local storage, to facilitate access. This is currently dependent on the creation of the online platform the game will be displayed at.

An improvement can be made to the algorithm that populates the school with students. Currently, the way the characters move around the school when a certain amount of time passes is random. A better solution would be to move the characters to an adjacent space, so as to mimic actual movement between the school. This modification can be made by tackling the school spaces as nodes and using graph theory to run the algorithm.

Finally, the silhouettes and chat bubbles are currently placed by hand for each chatting group that exists. An automated process where an input is given of the characters/tone of the conversation and it produces an image with their silhouettes in the shape of a group would be a more efficient way in the long run. This can be done by isolating every character silhouette, programming a bubble location for each character, and then creating an algorithm that assigns random positions to them, which will maintain distance between each to prevent overlap.

The eventual complete version of the game will be validated in multiple sessions featuring teachers, during this coming year of 2023, with a longitudinal study over the course of a number of months.

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Appendix

A.1 Character List



Figure A.1: Abel Polido, out-group student

Abel is a very athletic and good-natured young man. He is always telling jokes and making everyone laugh. He is in the school's Judo club and football team. When he play in tournaments, he always wins. Abel is Nando's childhood friend and does everything for his friend. When he realizes that something is wrong with him, he always goes to his defense. Nonetheless, he has a soft spot for Patrícia, but Nando doesn't know. Abel lives in a social neighborhood and his family has a lot of financial difficulties, so you can't always accompany his friends on outings. As a rule, Nando even helps him buy some school materials.



Figure A.2: Carmen Semedo, in-group student

Cármén is a cheerful young woman with a special talent for singing. She sings in the school choir and has a small legion of fans who are schoolmates. Cármén is her friend's friend and does not like injustice. She has been friends with Patrícia since elementary school. Since that time, they've often frequent each other's homes, and grew to be very close friends. As Cármén's parents are very protective, they don't let her go far beyond Patrícia's house. Cármén never liked Tatiana because she never spoke to nobody

and always found her unsympathetic. Now she likes her even less since Tatiana created a fake profile to communicate with Patrícia. She didn't like what she did to her friend. In recent months, Cármen has written some aggressive posts to Estrela because she would like to go on the field trip and preferred the visit to be different. She thinks her parents they won't let her go because Algarve is too far away. The way that Cármen arranged to deal with this frustration was to confront Estrela about the field trip, Online. Cármen thinks that Estrela put the destination of the visit as Algarve because she wanted to please her best friend, Isabel Torres, who always wanted to go there with her friends.



Figure A.3: Estrela Nunes, in-group student

Estrela is a responsible young woman. She is the class delegate and is very committed to the organization of the field trip. She devotes much of her time to issues related with the school and always defends her colleagues. Her best friend is Isabel Torres, a very outgoing young woman. Overall, the students in the class like Estrela. Nonetheless, there is a student in the class, Cármen, who has been bothering her in recent months because of the field trip. Estrela usually ignores her, but Cármen's posts have become increasingly aggressive.



Figure A.4: Hélder Almeida, in-group student

Hélder is a very popular student at the school. He likes to talk to everyone and is the director of the

Student Association's Solidarity Section. He has the spirit of a missionary, and when he is an adult he wants to travel the world to help the most disadvantaged. Hélder doesn't like intrigue and when he sees someone talking badly about another person, he gets very aggressive. Sometimes he posts comments on the Internet that can be considered offensive. However, in Hélder's view, he only does it to defend who he considers to be the weakest in the school.

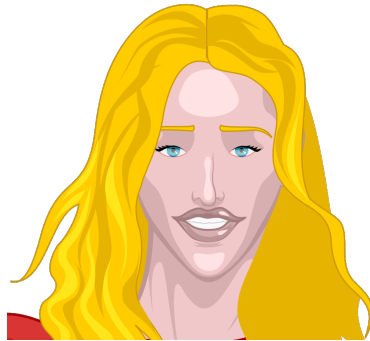


Figure A.5: Isabel Torres, in-group student

Isabel is a very outgoing and popular young woman. She has some difficulties at school because she can't concentrate much on her studies. She enjoys being with friends and travelling. Isabel always wanted to go to Algarve with her best friend, Estrela, but so far her parents never let her go. She believes that if it is a visit organized by the school, then the parents will let her. Isabel has been trying to convince her friend Estrela, who is organizing the study visit, to schedule the visit to Algarve. Isabel's other friends include Samuel, Hélder and Tatiana.



Figure A.6: Jorge Amaral, in-group student

Jorge is a young man who has many difficulties with his studies and despite not having many friends, he has a group of close friends who are very supportive. He likes to study with his friends, Abel, Rui and Samuel because they help him with the subjects. Jorge is very defensive of this group of friends and

usually supports their decisions. He knows Abel doesn't like Hélder and so he never spoke much with him, despite having nothing specifically against him.



Figure A.7: Manuela Leitão, out-group student

Manuela is an extroverted young woman. He likes to dance ballet and gossip with her colleagues. She has already won a European ballet award in the junior category, she got her recognition at the school. Some time ago, Manuela, together with Patrícia and Carmen, started to make fun of Tatiana at school. Manuela used to be friends with Tatiana in elementary school, but since she met Patrícia and Carmen, she moved away from Tatiana. Sometimes, Manuela was sad because she was making fun of Tatiana, but she was afraid that if she didn't, Patrícia and Carmen would turn against her and start making fun of her too, especially since she used to be friends with Tatiana. Manuela didn't know how to deal with the situation and she still regrets having done what she did to Tatiana. However, she also didn't like what Tatiana did to Patrícia with the fake profile. At the moment, Manuela is confused by the whole situation and doesn't know what to think.



Figure A.8: Nando Sapina, out-group student

Nando is a popular student at school who has good grades and plays football. He really likes animals, and in his spare time he works in a kennel as a volunteer to help the dogs who have no home. Nando is

Patrícia's current boyfriend. When Patrícia told him the what had happened with Tatiana, Nando didn't like it and went in defense of his girlfriend, posting comments and photographs about Tatiana. In other words, every time he sees Tatiana or there is something on the Internet that involves Tatiana, Nando makes sure she feels the same way as Patrícia felt it. Nando always defends his girlfriend, although sometimes he doesn't do it in the best way.



Figure A.9: Patrícia Isidoro, out-group student

Patricia is a studious and gossip girl. She enjoys spending time with her friends studying, listening to music and browsing social networks. Some time ago, she started to make fun of Tatiana at school, so the latter created a fake profile and started communicating with Patrícia. Patrícia felt bad and had to go to the hospital because her Internet acquaintance (a fake profile created by Tatiana) started sending her hostile messages after some time at Com@Viver. This situation became public and all schoolmates know what Tatiana did. Despite having made fun of Tatiana in class, Patrícia feels wronged by what she did online. Patricia is dating Nando and told him this story. She also knows that Samuel likes Tatiana, and as a way of settling accounts with her, Patrícia started posting comments about Samuel on Com@Viver.



Figure A.10: Rui Bento, out-group student

Rui is a studious teen, being the best in his class in mathematics, and having won national tournaments in that area. Rui likes to volunteer at the Support Victim Association and therefore is very sensitive to situations and negative comments from colleagues. When Rui reads something on the Internet that he doesn't like, he usually takes a stand, defending the person being targeted for inappropriate comments.



Figure A.11: Samuel Andrade, in-group student

Samuel is a very intelligent student, but not very popular at school. He likes to play video games and studying alone in the library. Sometimes Samuel is teased by his colleagues because he likes to be alone in the library, which leads him to have few friends. He's had a crush on Tatiana for a few months, but he doesn't know how to get close to her. He thinks that maybe the field trip is a good opportunity to get closer to her. Recently, Patrícia found out that Samuel likes Tatiana and since then, she hasn't stopped bothering him on social media.



Figure A.12: Tatiana Delgado, out-group student

Tatiana is a shy and studious young woman, and always get good grades. Tatiana is not very popular at school, but tends to defend classmates she thinks need help. There is a group of 3 colleagues (i.e. Manuela, Patrícia and Cármen) who make fun of her repeatedly in the school, sometimes throwing objects at her her back without the teachers noticing. When these incidents happen, Tatiana is very

hurt physically and psychologically. Some time ago, Tatiana created a fake male profile on Com@Viver and started chatting with Patrícia, the classmate who usually made fun of her the most in class. Patrícia showed interest in the fake profile, not only for the friendliness in his interactions, but also for the attractive photos that were placed on the profile. Then Tatiana, still pretending to be this person, told Patrícia that he didn't like her anymore because he thought she was ugly. Patrícia started to receive constant aggressive private messages from the profile (i.e. both at home and in school), such as: "You are worthless! You are fat and nobody wants you!". At that time, Patrícia felt very bad and had to go to the hospital. Patrícia's boyfriend, Nando, didn't like this story. Regarding Samuel, Tatiana doesn't know that he likes her.

A.2 Session 1 script

A.2.1 Character roles

Tatiana – out-group victim

Nando – out-group aggressor

Patrícia, Manuela, Abel – out-group observers that support the aggressor

Cármen – in-group observer that supports the aggressor

Rui – out-group observer that supports the victim

Estrela, Isabel e Samuel – in-group observers that support the victim

Hélder, Jorge – in-group observers that intend to ignore the situation

A.2.2 Situation 1 - during break 1

Description of situation 1: In break 1, near the schoolyard, the following dialogue takes place between three students. The students in question are looking at the cell phone of one of them.

Participants: Cármen, Manuela, Patrícia

Dialogue:

Manuela "O título da foto podia ser: a baleia fora de água."

Patrícia "Eu meti um like. Se fosse eu a andar assim de biquíni, morria!"

Cármen "Era o que ela devia fazer."

Manuela "(risos)"

Patrícia "(risos)"

Cármem “Da próxima vez escrevo isso mesmo. Mata-te!”

Manuela “Sim, ninguém te curte. Vai morrer longe!”

Cármem “(risos)”

Patrícia “O stôr/a stôra tá a olhar. Esconde o telemóvel.”

Interaction by the teacher regarding situation 1: Variables - Moral disengagement (and observer model: interpreting the situation as an emergency and taking responsibility for the situation)

Question: “Em que grau é que atribuo gravidade a esta situação?”

1. Não acho a situação nada grave.
2. Acho a situação pouco grave.
3. Acho a situação algo grave.
4. Acho a situação muito grave.

Sentences to indicate agreement level:

“Põem-se a partilhar coisas que não devem na internet e depois dá nisto...”

“Se parece mesmo uma baleia, é normal que digam isto...”

“Em vez de estarem interessadas nas coisas que estão a acontecer no mundo...”

“Estes comentários são inofensivos.”

“Enquanto professor, é minha responsabilidade ajudar os alunos a comunicarem de forma mais positiva.”

“Isto é violência e não faz qualquer sentido.”

“Pode ser preciso, enquanto professor, intervir em relação a esta situação.”

“Isto não é uma brincadeira porque estão a tentar magoar alguém.”

“Fazer este tipo de comentários pode magoar alguém.”

“Todas as pessoas têm valor, independentemente de como sejam.”

“Isto é violência e é sério.”

“Isto são ofensas e magoam.”

“Os pais deviam dar-lhes mais educação para não falarem assim.”

“Isto é típico da idade. Os adolescentes têm de passar por estas coisas para crescerem.”

“De certeza que conseguem resolver a situação entre elas.”

“É só uma brincadeira entre raparigas. Nada de especial.”

Feedback:

-“Ninguém merece ser maltratado.”

- “Todas as pessoas merecem ser valorizadas.”
- “Mesmo comparando com outras situações, a violência é sempre grave.”
- “Os comentários ofensivos têm consequências negativas.”
- +“Assumi responsabilidade por aquilo que pode fazer enquanto professor.”
- +“Assumi que a violência não tem justificção.”
- +“Assumi responsabilidade por aquilo que poderá fazer para ajudar.”
- +“Reconheceu que uma brincadeira não deve magoar.”
- +“Reconheceu que ninguém merece ser maltratado.”
- +“Reconheceu que todas as pessoas merecem ser valorizadas.”
- +“Reconheceu que a violência é sempre grave.”
- +“Reconheceu que os comentários ofensivos têm consequências negativas.”
- “Os professores são responsáveis por aquilo que podem fazer para educar os alunos.”
- “A violência nunca tem justificção.”
- “Os professores são responsáveis por aquilo que podem fazer para ajudar os alunos.”
- “Se alguém está a tentar magoar outra pessoa, não é uma brincadeira.”

A.2.3 Situation 2 - during class 1

Description of situation 2: After finishing the 1st class, there is a group of students talking at a table.

Participants: Cármen, Estrela, Hélder, Isabel, Samuel

Dialogue:

Isabel “Malta, já sabem o que aconteceu à Tatiana?”

Estrela “O quê? Não sei de nada.”

Isabel “Andam a partilhar uma foto dela em biquíni a dizer que ela é feia e gorda.”

Samuel “Eu até acho que ela está bem gira. ”

Isabel “Isto é bué grave! Ela tem estado fechada na casa de banho.”

Cármen “Ela é que leva tudo a sério! Foi só no gozo.”

Estrela “Dizes isso porque não é contigo! ”

Samuel “Temos de fazer alguma coisa para a ajudar.”

Hélder “Epá não sei se me vou meter nesse filme. Ainda sobra para nós!”

Interaction by the teacher regarding situation 2: Variables - Empathic concern

Question: “Em que grau é que esta situação me preocupa?”

1. Não me preocupa nada.
2. Preocupa-me pouco.
3. Preocupa-me alguma coisa.
4. Preocupa-me muito.

Sentences to indicate agreement level:

“Percebo que a Tatiana esteja a passar por uma situação difícil.”

“Percebo que quem pôs a foto de que os alunos estão a falar deva ter tido algum motivo.”

“Percebo que o Hélder não se queira meter nesta confusão.”

“Percebo porque é que os colegas estão a ser solidários com a Tatiana.”

“Percebo porque é que os colegas pensam que estão só a brincar com a Tatiana.”

Feedback:

+“Preocupou-se com uma aluna que está a ser maltratada por outros e entendeu a sua perspetiva.”

-“Quando um aluno é maltratado por outros é importante que os professores compreendam a sua perspetiva e a forma como o aluno se sente.”

-“Quando um aluno é maltratado por outros é importante que os professores compreendam a sua perspetiva e que os colegas lhe deem apoio.”

+“Entendeu a perspetiva de alunos que estão a apoiar uma colega que está a ser maltratada.”

-“Quando um aluno é maltratado por outros é importante que os professores compreendam a sua perspetiva e as consequências para o aluno.”

A.2.4 Situation 3 - during class 2

Description of situation 3: When entering the 2nd class, after the break 2, at the entrance of the classroom, a teacher appears.

Participants: Professor João

Dialogue:

Professor João “Um aluno enviou-me isto. A Cármen é tua aluna, não é?”

Professor João “(shows a photo of an online publication)”

Online Publication:

Nando Sapina: “Tatiana sua otária! És feia e gorda! Nem penses que vais na viagem de finalistas! LOL!”

- Patrícia Isidoro colocou um like.

Abel Polido: “Nando, gostas mazé dela man! Mesmo se anda com todos. LOL!”

Manuela Leitão: “E tem celulite! LOL!”

Cármen Semedo: “Eu não vou se ela for!”

Rui Bento: “Malta! Parem lá com isso! Não quero gente ordinária na viagem.”

Interaction by the teacher regarding situation 3: Variables - Emotional regulation

Question: “O que sentiu em relação à publicação?”

1. Felicidade
2. Indiferença
3. Preocupação
4. Raiva
5. Tristeza
6. Desprezo
7. Nojo
8. Surpresa

Sentences to indicate agreement level:

“Não devia sentir-me assim.”

“Não vou conseguir concentrar-me durante a aula.”

“Faz-me confusão o modo como me sinto.”

“Não vou conseguir controlar o que estou a sentir.”

“Não vou prestar atenção ao que estou a sentir.”

“Vou ficar a sentir-me assim a aula toda.”

A.2.5 Situation 4 - during break 3

Description of situation 4: In break 3, Nando is talking, surrounded by other students.

Participants: Abel, Cármen, Estrela, Hélder, Manuela, Nando, Patrícia

Dialogue:

Nando “Man, a Tatiana é o maior desperdício de oxigénio que anda por aí!”

Patrícia “Tem a mania que é melhor do que os outros, só porque passa os dias a estudar. Normal, não tem vida.”

Abel “Não tem vida, mas anda com todos.”

Carmén “(risos)”

Manuela “(risos)”

Estrela “Não veem que ela está bué mal? O que fizeram foi horrível!”

Nando “Ah, coitadinha! Buáaaaa.”

Patrícia “Ela sabe bem o que me fez primeiro!”

Estrela “Se fizerem mais alguma cena vou falar com o DT.”

Cármén “Não sejas uma falsa, Estrela. Lá porque és delegada de turma, pensas que mandas.”

Nando “Cala a boca, Estrela! Quem se meter nisto leva no focinho! E os seus amiguinhos todos.”

Hélder “Epá, eu não tenho nada a ver com isto, man.”

Estrela “Queres ser outra vez suspenso, Nando? Não te bastou o ano passado?”

Nando “Man, eu sou o dono desta escola toda! Ainda não perceberam?”

Interaction by the teacher regarding situation 4: Variables - Intervention (and observer model: knowing how to intervene and intervention strategies)

Question: “O que é que eu faço em relação ao que sei sobre a publicação do Nando sobre a Tatiana?”

1. “Não me vou envolver.”
2. “Vou fazer alguma coisa.”

Sentences to indicate agreement level (if answered 1):

“Acho que não iria conseguir alterar a situação.”

“Faço alguma coisa se alguém fizer queixa.”

“Vou esperar e ver se a situação piora.”

“Faço alguma coisa se os outros professores acharem que devo intervir.”

“Prefiro esperar para ver o que fazem os outros professores.”

“A Tatiana não é minha aluna. O Diretor de Turma dela é que deve intervir.”

“Qualquer professor que contacte com ela pode intervir porque a conhece melhor.”

“Não tenho informação suficiente para saber se isto afetou a Tatiana.”

“Estou cheio de trabalho. Acho que não vou ter tempo para me envolver nisto.”

Feedback:

“A sua intervenção poderá modificar a evolução e o desfecho de uma situação de violência entre alunos.”

- “É importante assumir a responsabilidade de intervir, mesmo que ninguém reporte a situação.”
- “Aguardar a evolução de uma situação de violência entre alunos poderá contribuir para que a mesma se agrave.”
- “É importante assumir a responsabilidade de intervir, independentemente do que os outros professores pensem.”
- “É importante assumir a responsabilidade de intervir, independentemente do que os outros professores façam.”
- “É importante assumir a responsabilidade de intervir, mesmo que haja outras pessoas que o possam fazer.”
- “É importante assumir a responsabilidade de intervir, mesmo que haja outras pessoas que o possam fazer.”
- “Qualquer comportamento agressivo com a intenção de magoar outra pessoa, afeta-a em alguma medida.”
- “É importante dedicar tempo a situações que afetam os alunos.”

Sentences to indicate agreement level (if answered 2):

- “Falar com cada um dos alunos envolvidos na situação individualmente.”
- “Falar com todos os alunos envolvidos na situação em conjunto.”
- “Reportar a situação à Direção.”
- “Falar com os pais dos alunos envolvidos na situação em conjunto.”
- “Falar com os pais da vítima e do agressor separadamente.”
- “Falar com o Diretor de Turma dos alunos envolvidos na situação.”
- “Reportar a situação ao psicólogo da escola.”
- “Denunciar a publicação na rede social para que seja retirada.”
- “Reportar a situação à Escola Segura.”

Followed by the extra questionnaire of ordering the same sentences in order of priority

Feedback:

- +“É recomendado que os professores falem separadamente com os alunos envolvidos. É importante apoiar a vítima, bem como orientar o/s agressor/es para a resolução não violenta de conflitos.”
- +“É recomendado que os professores falem separadamente com os alunos envolvidos. É importante apoiar a vítima, bem como orientar o/s agressor/es para a resolução não violenta de conflitos.”
- +“Apesar da importância de sinalizar a situação junto da Direção, é igualmente importante assumir responsabilidade de apoiar a vítima, bem como orientar o/s agressor/es para a resolução não violenta de conflitos.”

+“Após uma 1ª fase de diálogo em separado com os alunos e de identificação da situação enquanto cyberbullying, é importante que os pais da vítima e agressor/es sejam contactados separadamente pela escola para serem informados e prestarem apoio em casa.”

+“Após uma 1ª fase de diálogo em separado com os alunos e de identificação da situação enquanto cyberbullying, é importante que os pais da vítima e agressor/es sejam contactados separadamente pela escola para serem informados e prestarem apoio em casa.”

+“Apesar da importância de sinalizar a situação junto do Diretor de Turma, é igualmente importante assumir responsabilidade de apoiar a vítima e orientar o/s agressor/es para a resolução não violenta de conflitos.”

+“O Serviço de Psicologia poderá ajudar a encaminhar a vítima ou o/s agressor/es no sentido de obterem acompanhamento psicológico, quando necessário.”

+“Numa fase inicial, denunciar o conteúdo agressivo nas redes sociais poderá contribuir para que a publicação seja removida e partilhada em menor número. É igualmente importante apoiar a vítima, bem como orientar o/s agressor/es para a resolução não violenta de conflitos.”

+“É recomendado que a escola contacte as autoridades apenas quando há suspeitas de agressões que colocam em causa a integridade da vítima, como ameaça de morte, extorsão e/ou abuso sexual.”

A.2.6 Tasks

List of tasks:

“Enviar um e-mail antes da primeira aula (Sala de professores)”

“Escrever um recado urgente na caderneta do aluno (Sala de aula A)”

“Perceber quem é o(a) aluno(a) da publicação”

“Primeira aula às 10:00 (Sala de aula A)”

“Fazer fotocópias das fichas para a segunda aula (Biblioteca)”

“Ajudar o aluno das aulas de apoio (Sala de aula B)”

“Perceber quem é o(a) aluno(a) que publicou a fotografia”

“Segunda aula às 12:00 (Sala de aula B)”

“Preparar uma atividade antes da reunião (Sala de professores)”

“Comprar uma rifa dos alunos para apoiar o canil (Pátio)”

“Refletir sobre a publicação do Nando”

“Reunião com os professores às 15:00 (Sala de professores)”

Feedback for investigative tasks:

+“Dedicou tempo a identificar que algo de grave se passava com um aluno.”, -“É importante estar aten-

to/a a situações de risco envolvendo alunos.”

+“Dedicou tempo a identificar um aluno que estava a maltratar outro.”, -“É importante estar atento/a a situações de risco envolvendo alunos.”

+“Dedicou tempo a refletir sobre como intervir numa situação em que um aluno estava a ser maltratado por outros.”, -“É importante refletir sobre o que pode fazer para intervir numa situação em que um aluno está a ser maltratado por outros.

A.3 Session 0 (tutorial) script

Introduction of the story

“Lembro-me como se fosse hoje o que fiz no 1º dia na Escola Básica e Secundária de Campos Dourados... Os meus alunos de 9º ano estavam no 7º, e eu era um professor novo na escola que não sabia para onde ir. Parece que foi ontem...”

“Hoje é o meu primeiro dia nesta escola. Fui designado para ser o diretor da turma A do 7ºano.”

Tutorial section of the clock and time mechanic:

“Tenho uma aula às 10:00 com a minha Direção de Turma, na sala A. Posso consultar o relógio para saber quanto tempo tenho até ter de ir para a aula. Neste momento, faltam 30 minutos.”

Tutorial section of the normal tasks

“Devia passar pela sala de professores para terminar os apontamentos da aula que vou dar. Posso consultar a minha lista de tarefas para não me esquecer do que tenho a fazer.”

Task 1: “Acabar os apontamentos antes da aula (Sala de professores)”

Task 2: “Aula às 10h00 (Sala de aula A)”

“Quando completo uma tarefa, recebo um aviso visual e sonoro, e a lista de tarefas é atualizada. Posso ir preparar a aula mais cedo ou então posso explorar a escola um pouco.”

Tutorial section of the map

“Não sei onde fica a sala de professores, devia consultar o mapa interativo e procurar por ela.”

Tutorial section for movement

“Para entrar na escola, posso passar por qualquer uma das entradas.”

“Para aceder aos diferentes espaços, posso procurar por uma porta ou entrada como fiz no pátio, ou posso seguir as setas. As setas escuras simbolizam a direção de onde vim.”

Tutorial section for student information and Professor João

colega “Bom dia [player]! Então, como te estás a ambientar à escola?”

player “Bom dia João. Está a correr bem, a escola parece maior vista de fora.”

colega “Sim, é uma escola pequena. Nós temos cerca de 250 alunos e a maior parte das pessoas conhece-se, incluindo alunos, professores e encarregados de educação. Existe uma plataforma para os professores planificarem e gerirem as atividades diárias. Depois ajudo-te com isso.”

colega “Pelo que me lembro, hoje é a tua primeira aula. Tu ficaste diretor da turma A não foi?”

player “Sim, e tu?”

colega “Este ano fiquei diretor da turma B. Se precisares de alguma coisa, podes vir falar comigo ao gabinete. E não te preocupes, vais-adaptar bem!”

player “Obrigado, vou ter isso em conta. Vemo-nos mais tarde.”

colega “Até logo.”

colega “*vai em direção ao gabinete*”

player “O João é um bom colega e amigo; já nos conhecemos há alguns anos. Ele é o coordenador da escola, e é um professor com mais experiência. Se precisar de saber informação sobre a turma dele, posso visitá-lo no gabinete.”

Tutorial section of the investigative tasks

“Por hoje não tenho mais aulas. Devia ir procurar a Estrela para lhe entregar o formulário.”

“Tarefas que envolvem investigação aparecem com uma cor azul na lista de tarefas. Só considero a tarefa completa depois de anotar as minhas conclusões e pensamentos no meu bloco de notas, na sala de professores.”

“Estas tarefas são muito importantes e devem ser feitas assim que possível, pois podem afetar o bem-estar da comunidade escolar e o ambiente da escola.”

Task 3: “Descobrir o porquê de a Estrela não ter vindo à aula”

Sentences to indicate agreement level (if answered 1):

“A escola está bem conservada.”

“Os alunos pareceram-me simpáticos.”

“Os espaços são adequados.”

Feedback:

+“A escola tem algum tempo, mas foi feito um esforço para ser preservada.”

+“É o início de um novo ano, e os alunos estão motivados.”

+“A escola foi desenhada por um famoso arquiteto.”

A.4 Emotion Recognition Questionnaire

Veja os seguintes vídeos que representam os diálogos do jogo e, para cada um, descreva brevemente o que cada personagem está a sentir (certos rostos são silhuetas; não precisa de descrever as emoções dessas personagens).

NOTAS: Os vídeos não têm som. Pode ver os vídeos múltiplas vezes se precisar. É aconselhável ver os vídeos em tela cheia. Os vídeos podem não carregar em alguns navegadores; pode clicar no botão “YouTube” no vídeo para assisti-lo no YouTube.

Video 0

<http://youtube.com/watch?v=1WRtpdxMCQ4>

1. Cármen _____
2. Manuela _____
3. Patrícia _____

Video 1

http://youtube.com/watch?v=bJSqzR_A5cs

4. Tatiana _____

Video 2

http://youtube.com/watch?v=Sam_cJA6vuM

5. Estrela _____
6. Samuel _____

Video 3

<http://youtube.com/watch?v=cDgZArFL03o>

7. Isabel _____
8. Tatiana _____

Video 4

<http://youtube.com/watch?v=NfamgMnu6w0>

9. Tatiana _____

Video 5

<http://youtube.com/watch?v=wn-HJip2x70>

10. Tatiana _____

Video 6

http://youtube.com/watch?v=x_kLDxadJV8

11. Cármen _____

12. Estrela _____

13. Hélder _____

14. Isabel _____

15. Samuel _____

Video 7

<http://youtube.com/watch?v=HIU8-wME6D0>

16. Jorge _____

17. Nando _____

Video 8

<http://youtube.com/watch?v=pj9OzZAAFGo>

18. Nando _____

Video 9

<http://youtube.com/watch?v=lZXW48GVJ-M>

19. Manuela _____

20. Patrícia _____

Video 10

http://youtube.com/watch?v=ZZ_kq05AfRk

21. Nando _____

Video 11

http://youtube.com/watch?v=rNQaw_ybETs

22. Jorge _____

23. Nando _____

Video 12

http://youtube.com/watch?v=qc4QM_pc_eY

24. Abel _____

25. Cármen _____

26. Estrela _____

27. Hélder _____

28. Manuela _____

29. Nando _____

30. Patrícia _____

A.5 Post Game Questionnaire

1. Indique por favor:

Idade: ____ Sexo: _____ Anos de serviço: ____ Disciplina(s) que leciona: _____

Concelho: _____ Situação profissional: _____

Tipo de estabelecimento: Público / Privado

2. Com que frequência joga?

(Escolha apenas uma opção.)

Não joga.

Jogo ocasionalmente quando a oportunidade se proporciona.

Reservo parte do meu tempo para jogar.

3. Qual a sua familiaridade com jogos onde a história desempenha um forte papel na experiência (por exemplo, visual novels)?

(Escolha apenas uma opção.)

Esse tipo de jogos não me são familiares e/ou não tenho uma opinião formada sobre os mesmos.

Já joguei/vi outros jogarem o suficiente para perceber que não aprecio esse tipo de jogos.

Já joguei/vi outros jogarem muitas vezes e gosto desse tipo de jogos.

4. Teve algum tipo de formação sobre cyberbullying?

Sim / Não

Se sim, de que tipo?

(Pode escolher mais do que uma opção.)

- Webinar/Conferência
- Curso de curta duração
- Curso de longa duração
- Workshop
- Outro. Qual? _____

5. Considera que fez alguma aprendizagem durante o jogo? Se sim, indique a principal.

6. Considera que o jogo sério o conduziu a refletir sobre o cyberbullying? Indique em que medida.

- 1 (Nada)
- 2 (Pouco)
- 3 (Mais ou menos)
- 4 (Muito)

7. Que aspeto do jogo mais o ajudou a pensar sobre o cyberbullying?

(Caso tenha escolhido o ponto 1 da escala anterior, avance para a próxima questão.)

8. Indique em que medida achou o jogo útil no âmbito de uma formação para professores sobre o cyberbullying.

- 1 (Nada)
- 2 (Pouco)
- 3 (Mais ou menos)
- 4 (Muito)

9. Indique em que medida achou o jogo interessante no âmbito de uma formação para professores sobre o cyberbullying.

- 1 (Nada)
- 2 (Pouco)
- 3 (Mais ou menos)
- 4 (Muito)

10. Indique cinco aspetos do jogo dos quais se recorda melhor:

1. _____
2. _____
3. _____
4. _____
5. _____

11. Dos aspetos que descreveu na resposta anterior, indique qual considerou mais positivo e porquê.

12. E qual considerou mais negativo e porquê?

13. Que sugestões tem em relação ao jogo?

A.6 Map

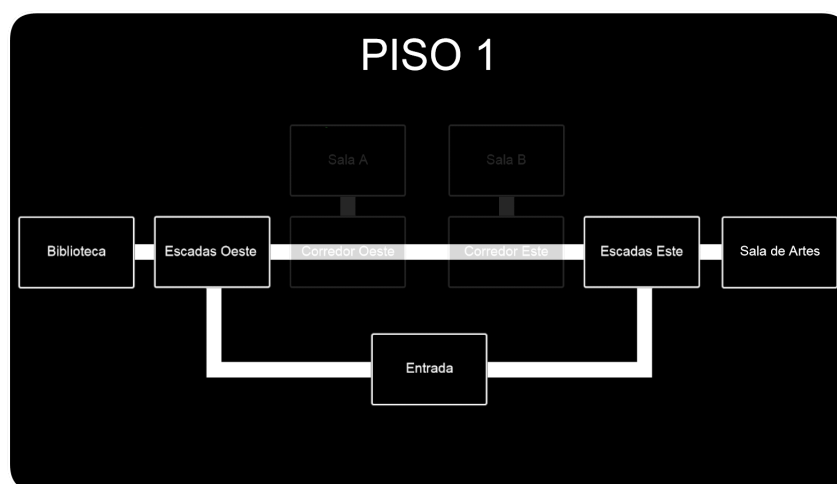


Figure A.13: First floor blueprint of the school

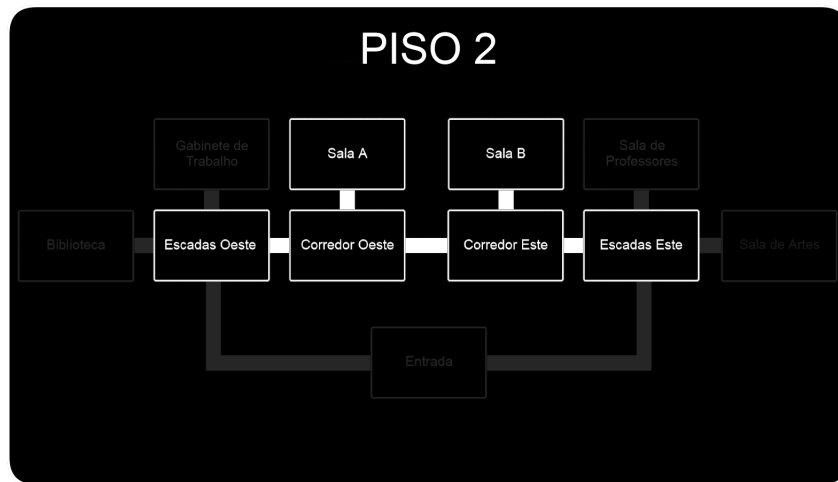


Figure A.14: Second floor blueprint of the school

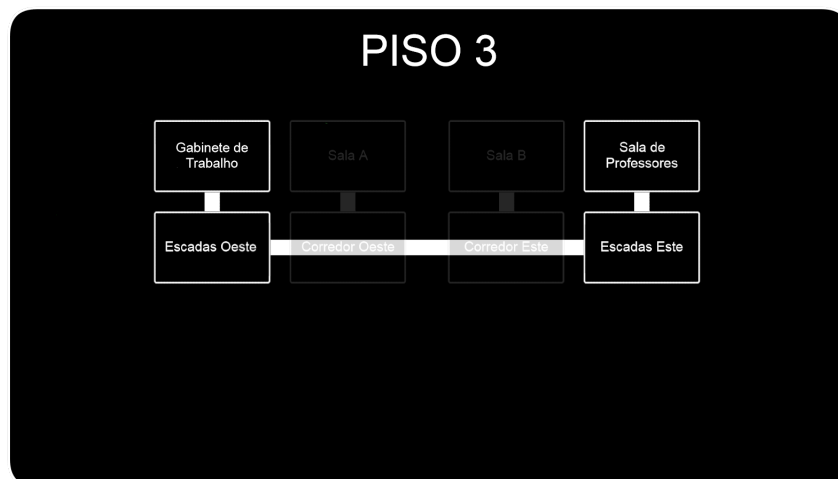


Figure A.15: Third floor blueprint of the school

