REPLAY PROJECT

Gaming Technology Platform for Social Reintegration of Marginalised Youth

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Abstract: The aim of European Commission founded project REPLAY is to develop a gaming technology platform to provide young people who have become marginalised in society as a result of anti social behaviour with a learning environment to facilitate their reintegration into society. Although scalable to a range of marginalised groups such as immigrants, children with learning disabilities, retirees etc, REPLAY will focus on the education and reeducation of young people whose behaviour might be a problem for the communities in which they live.

The project is funded by the European Commission under the 7th Framework Programme. It is a collaboration between seven partners in Spain, Romania and the UK. The coordinating partner is Brainstorm Multimedia, a technology company based in Valencia. Brainstorm lead the game development phase of the project. Innovatec, an SME based in Alicante, provides an innovative balance board interface into the game technology platform. AIJU, a toy research institute also based in Alicante, offers feedback throughout the process on the efficacy of the game. Alexander John Cuza University is the oldest academic institution in Romania: the Centre for Applied Research in Education participate in all phases of work. White Loop, a London based consultancy, contributes with particular focus on measuring the social and organisational impact of the game. Alongside three 'testbeds': in Romania, Rotalent, an NGO involved in exploring how giftedness affects behaviour and marginalisation; in Spain, the El Cerezo Day Centre, a facility whose main objective is to help reintegrate troubled young people back into society through actively encouraging the development of social capabilities and values; and Woolwhich Polytechnic School in UK participating as a volunteer organisation

In the paper we establish the main requirements in the design of the gaming paltaform based on experts opinions obtained in semi-in-depth interviews and Focus Groups. The gaming platform has been developed based on these requirements and it is under evaluation by the end users and review by experts from the European Commission.Innovation, technology, research projects, etc.

1 INTRODUCTION

The aim of European Commission funded project REPLAY is to develop a gaming technology platform to provide young people who have become marginalised in society as a result of anti social behaviour with a learning environment to facilitate their reintegration into society. Although scalable to a range of marginalised groups such as immigrants, children with learning disabilities, retirees etc, REPLAY will focus on the education and reeducation of young people whose behaviour might be a problem for the communities in which they live.

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2 CONTEXT

Anti-social behaviour is a significant issue in all developed societies. In countries like the UK, anti-social behaviour amongst young people is a political as much as a social issue. There are many measures in place across Europe that aim to deal with instances of anti-social behaviour, many of which mirror the approach taken to adult crime. This means a mixture of penalising the offender through a variety of punitive measures and attempting to engage offenders in programmes of rehabilitation. Furthermore, anti-social behaviour is seen largely as the 'first stage' towards an individual becoming involved in criminal activity when they are older: there is, as it were, a rising scale of behaviour that begins with low level anti-social behaviour in school and can end in serious or violent crime.

Within this context, a view has emerged that resources should be increasingly focussed on identifying and addressing individuals with behavioural problems as early as possible. A significant body of evidence suggests that by dealing effectively with children and young people who display low-level anti-social behaviour, there is a greater likelihood that these children will avoid falling into criminal activity as they get older. Enabling children to understand why they behave in the way they do, and then helping them break their behavioural patterns, can be hugely beneficial to the individual, the school and the community.

Alongside the paradigm of anti-social behaviour is the emergence, over the last 10-15 years, of pervasive technology and, within that context, the profound popularity of video games. Many studies indicate that the level of interaction between young people and video games – i.e. those who play these games regularly – is around 90% if you look at an age range of 10-14 year olds. As the technology has developed, these games have become more immersive in terms of graphics, sound and narrative and, with the emergence of the Nintendo Wii, more engaging in terms of physical game play. Furthermore, engagement with video games is particularly high amongst those with behavioural problems, as gaming can provide a sense of control and freedom to the player that they may struggle to experience in other parts of their lives. Many products are now emerging within the serious gaming paradigm. However, at this stage, the majority of serious games for children and young people are focussed on a traditional notion of teaching and learning: there are serious games to teach geography, maths, languages, chemistry etc. The acknowledgement of how positively many young people respond to a gaming environment and the associated benefits this can bring to the learning process are well documented. However, thus far, this approach has not be applied to the field of behaviour change. It is here that the REPLAY game sits.

3 MAIN REQUIREMENTS AN THE DESIGN OF THE GAMING PLATFORM

In identifying the main requirements of the REPLAY game, the consortium worked closely with user groups and experts at every stage to answer several questions. These questions, and the responses we received, are outlined below. Answers were obtained through consultation with those working with children that demonstrate anti-social behavioural problems or are perceived as 'at risk' in the future and could be marginalised or excluded as a result. We also worked with children to better understand what they liked in the video games they played, what elements engaged them and why they chose to play the games they play. This was vital in informing the 'playability' of the game. We engaged all users and experts in Focus Groups and semi-in-depth questionnaires in order to obtain the essential feedback that enabled us to develop the gaming platform in such a way that the needs and requirements of the experts working with children were met and the gaming tendencies and interests of the children and young people were supported.

3.1 What Type of Tool should REPLAY be?

There was considerable debate throughout the focus groups sessions as to whether the REPLAY game should be designed primarily as a therapeutic tool – i.e. something that, in of itself, can address behavioural issues and effect change – or rather as an assessment tool – i.e. something that helps professionals better understand the young person with behavioural problems and, in doing so, helps them address these issues. The ability of a tool like this to be successful as a therapy is viewed as ambitious, particularly in addressing issues in older children. It would be very challenging to write the game contents in such a way that, on its own, the game could educate and change the behaviour of a player. However, there is, it seems, an opportunity to use the game to create an opportunity for open and honest dialogue between player and professional and that, in so doing, that could lead to positive therapeutic outcomes. This is something we considered in the design of the game and the authoring of the game contents.

In thinking about the game as an assessment tool, the value was immediately clear. Current assessment tools, aimed at understanding the motivations and feelings of individuals through an interview or question and answer session, could be transposed highly effectively into game contents. By presenting options or choices in relation to questions or dilemmas during game play, the care professional will be able to assess and record the player's responses, as well as using those responses as a starting point for further discussion. By adopting the content approach used in current (successful) assessment tools but presenting this approach within a game context, REPLAY could prove to be significantly more effective in eliciting open and honest responses to the questions and dilemmas posed. The major criticism of current 'talking therapies' is that they happen in what is essentially an adult environment: sitting face to face with a care professional to discuss your feelings is not a natural context for many young people. Situating these questions, and the broader discussion, within the structure of a game would significantly enhance the openness and engagement of the young person as a whole. In addition, this approach does not restrict or negate the use of the game as a starting point for more therapeutic aims.

3.2 Who should the Game be for?

Throughout the focus group sessions, we talked about 'children and young people' as being, broadly, the target audience for the REPLAY game. It became clear from the expert opinions expressed during this process that specific age groups within the broad description will have different reference points and, therefore, need to be addressed in different ways and with different content.

When we are thinking about who the game should be for, we first have to decide what we are trying to achieve. During the focus group sessions, one thing became clear: the most effective way to deal with anti-social behaviour is to address the problems as early as you can. As a child gets older, the manifestation of anti-social behaviour becomes more serious, ultimately leading to criminal activity. In addition, the effectiveness of interventions becomes less certain. Also, the number of young people exhibiting lower level types of behaviour is much greater than those behaving in a more serious manner. While there is clearly an application for REPLAY at any age, the conclusion is that a younger age group would be the best target audience for the initial REPLAY prototype.

Although some experts suggested that this younger age group could begin at age 7 or eight, we suggest

that game content be generated for a slightly older group. Those young people between 10 and 14 tend to exhibit the most pronounced 'early warning signs' of potentially problematic behaviours. Plus they are going through significant personal transitions – puberty; change of school etc. - during this age phase. On this basis, the 10 to 14 age group will provide the initial focus point for content development. Within this age cohort, it was decided that two levels of ability should be catered for as the difference in cognition between a 10 year old and a 14 year old – or the difference between a gifted 12 year old and a 12 year old with learning difficulties – can be significant. Developing both a lower and upper ability content set will hopefully address this.

A further issue in considering the target audience for REPLAY is that of gender. Examples of anti-social behaviour are significantly more prevalent amongst boys than girls. However, REPLAY should be developed in such a way as to appeal (or be applicable to) either boys or girls. Part of the testing phase of the project will be to analyse the different reactions of boys and girls to the REPLAY game. This has to be done within a wider context in which engagement with, and participation in, games and gaming technology is more prevalent amongst males than females. Therefore, the simple premise of REPLAY as a game could be a negative factor in the level of female engagement. This is something we intend to monitor during testing.

3.3 What Type/Causes of Behaviour should be Addressed?

During the first phase of the project, we worked with experts in the field as well as conducting a literature search to provide us with a set of classifications that would help us understand the different levels of anti-social behaviour amongst young people. This, in turn, helped us in considering where the focus for the REPLAY game should be and how the content should be designed. The following table indicates the progression of anti-social behaviour from low to high:

Level	Behaviour	Definition
1 (low)	**Disruption in the classroom**	Defined as a situation in a classroom where 3 or 4 students due to their bad behaviour prevent the normal development of classroom activities, forcing a teacher to devote more and more time to controlling discipline and order. This classification of ASB is considered the most direct preoccupation and the most important source of unhappiness amongst education professionals. However, outside of the classroom it receives much less attention.
2	**Discipline problems (conflict between teaching staff and student)**	Defined as behaviours which involve a larger or smaller level of violence to general classroom disruption. This ranges from resistance or passive "boycott" to actively challenging and insulting teaching staff that can completely destabilise daily life in the classroom. (Debarbieux, 1997)
3	**Bullying**	Defined as the processes of intimidation and victimisation between peers, i.e. students who share a classroom or educational centre (Ortega and Mora-Merchan, 1997). More specifically, where a one or more students attack or intimidate another (victim) through insults, rumours, humiliation, social isolation, calling names etc. Even if this doesn't constitute violence, in the long term it can have devastating effects.
4	**Vandalism and material damage**	Vandalism is classified and limited to clear acts of violence against things. Though in combination with Physical Violence this has a great impact education centres and general public opinion, such acts don't usually constitute more than 10% of ASB registered in said centres.
5	**Physical violence**	This phenomena classified and limited to clear acts of violence against people and the increase and prevalence of all types of weapons within schools has lead to drastic measures in many countries.
6 (high)	**Sexual harassment**	To a certain extent, sexual harassment may be considered as a specific form of bullying, in the same way that we could describe in such terms, racist and xenophobic abuse. However, abuse, aggression and harassment of a sexual nature has enough relevance for it to be considered as a separate category. The level of this abuse varies between 4% of boys taken from a sample in Germany and 22% of Dutch girls admitting to having been victims of it.

Figure 1: Table of anti-social behaviour progression (from low to high).

What is clear from this data is that there is a gradually rising scale of behaviours that start with low level activity and end, eventually, with criminal activity. Furthermore, low level activity is consistently described as an 'early indicator' of more serious problems as young people move into late-teens and adulthood. In addition, low level activity is extremely common in schools and communities and represents the majority of incidents of anti-social behaviour.

On this basis, the REPLAY game should seek to address low level activity as its primary objective. In this way, the game will not only be dealing with the most common and prevalent types of behaviours but will also be part of an approach that seeks to catch problems early, something that is becoming the norm in countries across Europe.

This notion of 'early intervention' – referenced earlier - is not only key in addressing anti-social behaviour as part of a wider approach to dealing with criminal behaviour but is also predicated on the notion that prevention is better (and cheaper) than therapy. In addition, by pitching REPLAY as an early intervention preventative tool, we are maximising impact and ensuring that we will meet the demands of the market once the product is commercialised.

When we are developing the content for the game, we should focus on addressing the underlying elements that seem to be most important in their impact on low-level behaviour and are most clearly manifest amongst our target group. Primary amongst these is the notion of setting boundaries – this, in itself, relates to the idea of values and of the need to understand and challenge the value system of the young person with behavioural issues. Many of the low-level behaviours relate to the notion of boundaries being either crossed or not understood. This often manifests itself in behaviour that challenges authority or ignores basic rules and regulations. This is particularly relevant within a school context. By focussing on individual values and how these manifest in behavioural terms, we will be ensuring that the REPLAY game is addressing the core issues relating to anti-social behaviour amongst young people.

3.4 Which Sort of Exercises and Activities should be Included?

One of the main requirements identified during our initial consultation process was that the exercises or activities we embed in the REPLAY game must be able to be carried out in multimedia format in order to take advantage of the added value that a 3D multimedia application like Replay offers us. On the other hand, in order to maintain consistency between the 3D game and current (non-technology) based activities, we must develop exercises that reflect the inherent approach of existing tools. As such, including images, audio and video is a priority. In addition, some exercises will inevitably be text based, although we will use audio to augment the communication of text-based activities.

We will also try to maximise the impact of gaming technology in this field by integrating activities into the game play itself (rather than simply taking existing content and reproducing that on-screen). We will attempt to exploit the significant possibilities video game technology offers to create decision-making choices and to present two dimensional media in a three dimensional format – enriching existing approaches with sound, video and making the whole experience more immersive.

As far as possible, activities will be woven into the structure of the game itself and will therefore be less obvious to the player. If we can achieve this, we will ensure the game has greater impact and this will increase the effectiveness of the tool as a support mechanism.

We will incentivise engagement with contents by making activities mandatory in order that the player can progress to the next stage of the game. However, we would argue that non-engagement with game contents would, in itself, provide an interesting and valuable starting point for further discussion.

It is important to be clear, at this point, that the game will be designed to be played by the young person in company with a teacher or care professional (rather than by the young person on their own). There will be two 'modes' to the game: the first will be Play mode which will involve the player navigating through the game environment, completing activities as they arise. The second mode – available once the player has completed the course – will be REPLAY mode. This will allow the decisions, choices and reactions the player gave during Play mode to be replayed back to them. At this point, the teacher or care professional can use Replay mode as a launch pad for discussion: "Why did you choose that option? Why did you take that path? Etc." All choices made will be recorded so that the teacher or care professional will have a record of the player's reactions and can use this to inform further action as part of a coordinated behavioural programme.
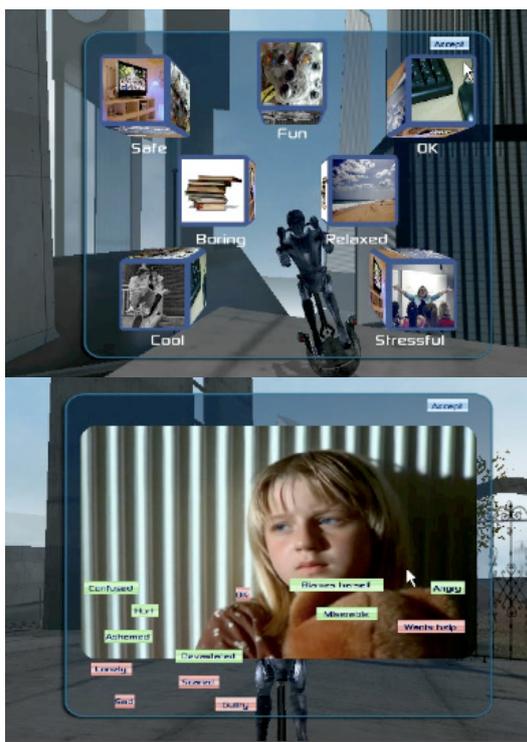
Figure 2: Some example screens from the REPLAY platform.

4 CONCLUSIONS

The REPLAY Gaming Platform has been designed according to the opinions, needs and requirements of the experts engaged in the project. Although not all suggestions have been implemented due to technical and time constrains, we believe we have managed to create a tool that supports the objectives of teachers and care professionals in addressing anti-social behaviour in young people whilst at the same time is compelling in terms of graphics, sound and playability to young gamers. . We will learn a great deal more about the effectiveness of the game from the testing cycle that will begin in early 2010 and take place in our three test centres in Europe. Many of the experts who have be\j.ken involved in developing the game concept and contents will also be involved in testing the prototype with young people. Beyond this, the game has been built in such a way that we can quickly update and develop new content activities, ensuring that a commercially viable product can be brought to market quickly and that difference versions can be created to meet the specific interests and abilities of different players. We hope ultimately to create a new paradigm in

serious gaming that will lead the way in terms of next generation epistemic applications for young people.Use as many sections as you need (e.g. Methodology, Results, Conclussions, etc.) and end the paper with the list of refecences.

Although the market for so-called 'serious games' has grown rapidly over recent years, there is still much to learn about what makes a successful eduactional game. The dynamic between the immersion and playability of the game and the didactic content embedded is critical in the success of a game like REPLAY. Furthermore, the game itself needs to be pitched at a level that the player feels is both hard enough to be a challenge and easy enough to complete. In addition, a game like REPLAY will not be played continuously or for long periods of time by the player, designed, as it is, to be played in collaboration with a teacher or professional as part of a wider behavioural programme. This makes it fundamentally different (as a game) from the sorts of games that young people are used to playing and that are based, predominantly, on the assumption that the player will have many hours if not days to master the different stages of the game. And finally, developing a game for implementation into an educational or rehabilitation context creates a number of practical challenges that need to be taken account of if the game is to become a successful commerical application. With all this in mind, the main lessons learnt from the REPLAY project are as follows:

- Young people have a very high 'game literacy' – for any serious game to be successful on any level, it needs to approximate in terms of gameplay and immersion the sorts of games those young people are used to playing. It is too easy to lose the game element and just be left with the serious element. If this happens, engagement in the game will disappear.

- Finding the right level, in terms of playability and the difficulty of the content, is critical in the success of a serious game. If either is too easy or too hard, the player will quickly lose interest (if the game is too easy) or become demoralised (if the game is too hard). The best solution to this, within the REPLAY context, is to ensure that the game can be pre-configured both in terms of content and playability, for the specific player who is about to play (and that this configuration can be changed quickly in accordance with the player's ability).

- A game of this sort, that will not be played for long or very frequently, needs to be designed

with this in mind. This means that the set-up and scenario needs to be immediately engaging without being too complex, the goals of the game needs to be easily articulated and the basic functions of the game need to be easily mastered. The time available for each player to learn how to play the game will be short so they need to be able to engage and become proficent quickly.

- The pressures that exist within the context of behavioural programmes in schools and rehabilitation centres are significant in terms of time, resources, budgets and, sometimes, technology. Therefore any final product designed for this market needs to be developed with the realities of the market in mind. It is, for example, highly unlikely that an individual student within a school context will be able to receive more than an hour one-to-one attention from a member of staff within a given time period. Much of the behavioural work that is done within this context happens in groups. REPLAY is designed to be run one-to-one. Therefore, if we are to end up with a fully implementable commercial product, we need to develop REPLAY with a clear understanding of the practical factors that will, in the end, govern any such purchase within an educational institution.

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