

USING ALTERNATE REALITY GAMES TO SUPPORT THE TEACHING OF MODERN FOREIGN LANGUAGES

Thomas M. Connolly

School of Computing, University of Paisley, High St, Paisley, Scotland

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Abstract: It is recognised that games play an important role in child development. Nowadays with children growing up in a highly technologically-rich society, many of these games are computer/console based. These types of games, which we will refer to generically as computer games in this paper, have been of interest to researchers from many different perspectives, some positive (for example, motivation, engagement, learning, skills development) and some negative (for example, violence, aggression, gender stereotyping). One particular type of game that has not been explored in detail for teaching and learning is the Alternate Reality Game (ARG), a form of interactive narrative, often involving multiple media and game elements, to tell a story that may be affected by participants' ideas or actions. In this paper we discuss the use of an ARG to help support the teaching and learning of modern foreign languages by European secondary school children (ages 11-18).

1 INTRODUCTION

According to figures obtained by one of the political parties in the UK, only 48% of pupils in England took a modern European language at GCSE level in 2007, down from 83% in 2000. It has been recognized for some time that there has been a decline in this area despite a number of initiatives to reverse this trend. Among other proposals, the UK government is now proposing to make languages compulsory in primary schools.

This is an unfortunate situation that has developed as modern foreign languages (MFLs) can provide an enhanced learning experience. MFL teaching promotes young people's cultural development by providing them with insights into cultural differences and opportunities to relate these to their own experience, and to consider different cultural and linguistic traditions, attitudes and behaviours. Effective teaching in MFLs can make a significant contribution to young people's ability to value diversity and challenge racism by providing opportunities for them to (QCA, 2007):

- discover that many different languages are spoken throughout the world, and that many languages are spoken in a number of different

countries and by people from different ethnic backgrounds;

- recognise that understanding another language promotes a deeper appreciation of speakers of that language and of their culture;
- learn that the ability to communicate with speakers of other languages can nurture mutual respect, tolerance and understanding;
- appreciate that speakers of different languages may have beliefs, attitudes, behaviours and experiences that are of equal worth;
- communicate in the target language, in pairs and groups, with their teacher and with native speakers, and thereby learn the importance of listening carefully to others and of conveying a clear message;
- appreciate the effort required by speakers to communicate successfully in a language that is not their first language.

As noted by Crookall (2007), language teachers make great use of simulation/gaming methodologies and there are many supporting textbooks and research papers that present various forms of role-play, games, simulations, and other exercises. (eg. Gaudart, 1999; Garcia-Carbonell, Rising, Montero, & Watts, 2001; Halleck, 2007). While many of the

simulations/games used are non-computer based, during recent years the computer game has become an important development in popular culture. During the same period there has been an appreciation that computer games can play a significant role in education. There is no doubt that computer games are extremely engaging and incorporate features that have an extremely compelling, even addictive quality. It is these highly engaging features of computer games that have attracted the interests of educationalists.

In this paper, we explore a particular genre of game called the Alternate Reality Game (ARG), which is a form of interactive narrative, often involving multiple media and game elements, to tell a story that may be influenced by participants' ideas or actions. We are investigating the use of ARGs to help support the learning of modern foreign languages by European secondary school children (ages 11-18). In the next section we examine the literature on games and motivation, games-based learning and ARGs, and some of links between games and theories of learning and instruction. In Section 3, we outline the work we are carrying out to use ARGs for teaching purposes and the challenges this will entail.

2 PREVIOUS RESEARCH

2.1 Computer Games and Motivation

Dempsey *et al.* (1996, page 2) cited in Mitchell and Savill-Smith (2004) define a game as "...a set of activities involving one or more players. It has goals, constraints, payoffs and consequences. A game is rule-guided and artificial in some respects. Finally, a game involves some aspect of competition, even if that competition is with oneself." Caillois (1961) defines a game as an activity that is voluntary and enjoyable, separate from the real world, uncertain, unproductive (in that the activity does not produce any goods of external value), and governed by rules. Prensky (2001) defines the key characteristics of games as: rules, goals and objectives, outcomes and feedback, conflict (and/or competition, challenge, opposition), interaction, and representation of story.

To understand why computers games are so engaging we need to understand the reasons why people play them. In recent years research on motivation has made progress in trying to explain why people behave in the ways that they do. Motivation theorists since Maslow (1970) have explained behaviours in terms of human needs and

desires. In self-determination theory, Ryan and Deci (2000) distinguish between different types of motivation based on the various reasons or goals that give rise to an action. The most basic distinction is between intrinsic and extrinsic motivation. Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable while extrinsic motivation refers to doing something because it leads to a separable outcome (such as a verbal reward like praise or a tangible reward like money).

Research on achievement motivation (Elliot, 1999) faces the challenge of explaining why individuals take part in learning activities that are difficult, not always interesting or enjoyable and require a lot of effort and persistence to succeed. Theories of achievement motivation have identified a number of features leading to higher motivation including mastery orientation, internal locus of control, high self-efficacy, expectancy of success, task value, self-regulation and autonomy. Many of these features are related to intrinsic motivation.

Others have tried to provide a more detailed account of important features in intrinsic motivation. Malone and Lepper (1987) present a theoretical framework of factors influencing intrinsic motivation in the design of educational computer games. They suggest that intrinsic motivation is created by four individual factors: challenge, fantasy, curiosity and control and three interpersonal factors: cooperation, competition, and recognition. Interestingly these factors also describe what makes a good game, irrespective of its educational qualities. While intrinsic motivation is highly desirable, many of the activities in which learners engage in is directly influenced by extrinsic rather than intrinsic motivation (Csikszentmihalyi & Nakamura, 1989). Unfortunately evidence suggests that extrinsic motivators may lead to merely short-range activity while actually reducing long-range interest in a topic while with intrinsic motivators learners tend to persist longer, work harder, actively apply strategies and retain key information more consistently (Guthrie *et al.*, 1996). Thus, extrinsic motivators must be supported by intrinsic motivators, otherwise the result is likely to be a reduction in the very behaviour we want to promote. One of the most serious problems that research has pointed out during the past two decades is that extrinsic motivation when used alone is likely to have precisely the opposite impact that we want it to have on learner achievement (Lepper & Hodell, 1989).

Computer games induce emotional reactions within players that encourage them to continue involvement with the game. These reactions include satisfaction, desire, anger, absorption, interest, excitement, enjoyment, pride in achievement, and

the (dis)approbation of peers and of others. It is in provoking and harnessing some of these emotions and their consequences that computer games might benefit education. This is borne out by a study by Ricci, Salas and Cannon-Bowers (1996), which found that incorporating game features into instruction increased motivation and consequently produced greater attention and retention. An empirical study by Chen, Shen, Ou and Liu (1998) demonstrated the positive effects of computer games on motivation and learning.

Research on achievement motivation has identified many features that motivate students in learning, but there is a more obvious characteristic that appears to be important in engaging players of computer games and that is fun and enjoyment. Interestingly, there is surprisingly little research on the motivating value of fun (Prensky, 2002). Perhaps it is seen as self-evident that fun is intrinsically motivating and that people will want to engage in activities that they find pleasurable. The literature on achievement motivation does not discuss fun as a motive for learning. Prensky (2002) argues that there is a strong resistance to considering that fun might be one of the goals of learning. He contends that this is largely for historical reasons: learning was introduced via religious organisations and it was thought that learning should be formal and serious.

While we might imagine that introducing the fun factor of computer games into learning might be highly attractive, some researchers believe that learning should not be fun; for example, Stoll (1999, p. 22) states *“What seems like a game to someone will feel like work to another. The intention should be enlightenment, not entertainment. Learning isn’t about acquiring information, maximising efficiency, or enjoyment. Learning is about developing human capacity. To turn learning into fun is to denigrate the two most important things we can do as humans: To teach. To learn.”*. Certainly it may turn out that entertainment and education are ultimately incompatible. Okan (2003), for example, points out that while computer games are highly motivating they may be only motivating to play games and not to learn.

There are also other issues that may prevent computer games becoming a primary tool in education. The most frequently cited concerns are around the long term effects of violence on game players, although there is no agreed consensus. For example, Provenzo (1991) claims that computer games: (a) can lead to violent, aggressive behaviour; (b) employ destructive gender stereotyping; (c) promote unhealthy ‘rugged individualist’ attitudes and (d) stifle creative play. On the other hand, catharsis theory states that games playing may be a useful means of coping with, or releasing, pent-up

aggression (Emes, 1997). Other negative aspects of gaming that researchers emphasize include gaming addiction (Griffiths & Hunt, 1998); poor sleep patterns (Higuchi *et al.*, 2005); obesity (Vandewater, Shim, & Caplovitz, 2004); the prevalence in computer games of violent imagery (Smith, Lachlan, & Tamborini, 2003); and problematic cultural ideologies (Gottschalk, 1995).

2.2 Games-based Learning

Connolly and Stansfield (2007) define computer games-based learning as “the use of a computer games-based approach to deliver, support, and enhance teaching, learning, assessment, and evaluation”. This is a research area that may be conceptualized as the intersection of learning theory, computer games theory and design, user interfaces, and subject matter expertise. In this conceptualization, learning theory serves as the foundation to ensure that technology does not become the dominant factor.

Many games-based learning applications are PC-based and typically involve the use of 2D or 3D graphics. For example, Figure 1 shows a screenshot from Virtual U (<http://virtual-u.org>) modelled after the popular SimCity series, which aims to train university administrators and graduate students to deal with the growing complexities and challenges of running a modern university. While Virtual U is a simulation, it is grounded in authentic data from 1,200 universities and colleges in the United States (Penrod & Perry, 2003). Figure 2 shows a screenshot from America’s Army, which was released by the US Army to aid recruitment. This game allows users to learn about a range of key skills that include teamwork, leadership and communication as they navigate challenges to achieve goals.



Figure 1: Screenshot from Virtual U.



Figure 2: Sample screenshot from America's Army.

2.3 Alternate Reality Games

Alternate Reality Games (ARGs) or “immersive gaming” is a blend of online narrative and puzzle solving (similar to an online scavenger hunt). The narrative is gradually revealed through a series of media such as websites, instant messaging, text messages, emails, wikis and blogs and, in some cases, TV and newspaper adverts and telephone calls.

Central to the development and running of an ARG is the *puppetmaster*, who is simultaneously an ally and adversary to the player base, creating obstacles and providing resources for overcoming them in the course of telling the game's story.

One of the earliest ARGs was developed in 2001 to market the film *A.I.: Artificial Intelligence* and a series of Microsoft computer games based on the film. It was based on an elaborate murder mystery played out across hundreds of websites, email messages, faxes, fake ads, and voicemail messages. At its height it involved over three million active participants from all over the world; in essence, it was a type of massively multiplayer online game (MMOG). Due to the size of the assets involved in the early stages of development, the game became known as “The Beast”. Microsoft also used this type of game to create significant market hype around the launch of the Xbox game *Halo 2*. Called “I Love Bees”, the game wove together an interactive narrative set in 2004 and a War of the Worlds-style radio drama set in the future, broken into 30-60 second segments and broadcast over telephones worldwide.

Fundamental to the solving of the game is collaboration – players must work together to solve the puzzles and ultimately the game. In most games the player controls an avatar to interact in a virtual

world. In contrast, one of the potential strengths of ARGs is that the players play themselves. Thus, instead of helping an avatar to ‘learn’ new skills and gain experience, ARGs rely on the knowledge that a player already possesses. One further technological area that has been identified as having strong impact on learning is the emergence of social networking. Interestingly, not only are ARGs a form of computer game they are also heavily built around social networking.

2.4 Theories of Learning and Instruction

Within the theories of learning and instruction we can identify highly desirable qualities of Alternate Reality Games that are worthy of further investigation. Connolly *et al.* (2004) argue that such games build on theories of:

- *Constructivism*, a philosophical, epistemological, and pedagogical approach to learning, where learning is viewed as an active process in which learners construct new ideas or concepts based upon their current/past knowledge. The learner selects and transforms information, constructs hypotheses, and makes decisions, relying on a cognitive structure to do so.
- *Situated Learning*, where learning is viewed as a function of the activity, context and culture in which it occurs (Lave, 1988).
- *Cognitive Apprenticeship*, an instructional strategy that models the processes experts use to handle complex tasks. The focus is on cognitive and metacognitive skills, requiring the externalization of processes that are usually carried out internally. Observing the processes by which an expert thinks and practices these skills teach students to learn on their own (Collins, Brown, & Newman, 1989).
- *Problem-based Learning*, an instructional strategy for posing significant, contextualized, real world situations, and providing resources, guidance, and instruction to learners as they develop content knowledge and problem-solving skills (Mayo, Donnelly, Nash, & Schwartz, 1993).

In addition to the cognitive dimension of knowledge and skills and the emotional dimension of feelings and motivation, there is also a growing recognition that learning also encompasses the social dimension of communication and cooperation – all three of which are embedded in a societally situated context

(Illeris, 2002). Connolly and Stansfield (2007) also suggest that computer games have a number of social aspects that may lead to enhanced learning. For example, in a *community of practice* learning occurs through participation in the practices of the community, as individuals develop ways of thinking and reframe their identities and interests in relation to the community (Lave & Wenger, 1991). More specifically, Wenger (1998) identifies four aspects of learning within the community of practice framework: (a) learning as doing, or changes in how we engage in social practices, (b) learning as experience, or changes in how we make meaning of our lives and our worlds, (c) learning as becoming, or changes in our identities, and (d) learning as belonging, or changes in our relationships to the community and practices.

Learning communities, whether these are face-to-face or online, are drawn together through the principles of ‘commonality’ and ‘interdependence’. Commonality involves a process of working together in common areas and interests and, in the process, forming a bond or identity with one another and with the group as a whole. Interdependence implies depending on one another in a positive way for information, knowledge organisation, and shared problem solving. A desirable feature of online learning communities is that there exists varying demands and expertise at different levels of competency where participants can scaffold one another through the sharing of information and abilities. Strong community is important as it has been shown to lead to deep learning (Chapman, Ramondt, & Smiley, 2005). Two important activities in communities are communication and collaboration, which provide opportunities for reflection and articulation.

McGonigal (in print) argues that the gameplay within *I Love Bees* develops “collective intelligence” through three stages: a) collective cognition, b) cooperation, and c) coordination. She believes these distinct stages of collaboration occur through three aspects of game design, namely: a) *massively distributed content*, b) meaningful ambiguity, and c) real-time responsiveness, and “*that these elements form a reproducible set of core design requirements that may be used to inspire future learning systems that support and ultimately bring to a satisfying conclusion a firsthand engagement with collective intelligence*”.

3 USING ARGS TO TEACH MODERN FOREIGN LANGUAGES

While Alternate Reality Games have been used primarily as a marketing tool, such games exhibit qualities that may make them extremely useful within teaching and learning. Our aim is to investigate the use of ARGs to support the teaching and learning of modern foreign languages within secondary education across several European countries. The plan is to develop an appropriate ARG that will allow groups of pupils across Europe to work collaboratively to solve the game. The game will be such that the pupils have to communicate in the language they are learning to solve the puzzles. Like other ARGs, not all of the game will be scripted prior to commencement of the game and the teachers, as puppetmasters, will be able to dynamically intervene to scaffold and further challenge the pupils. We currently envisage using a number of multimedia mechanisms including websites, instant messaging, text messages, emails, wikis and blogs.

There are a number of design challenges that we will face in this project, such as:

- How to design an integrated set of multi-lingual, multi-media problems that require collective effort to solve.
- How to create an interface to communicate individual, differentiated roles within the collaborative structure.
- How to design for collective intelligence, rather than “hive mind” or “mob effect”.
- How to produce a replicable solution that can be used by modern foreign language teachers across Europe.
- How to ensure the system is “secure” so that only authorised users can access the system (critical for many European countries where children are involved).
- How to evaluate the usefulness of ARGs for learning a modern foreign language.

The last challenge listed is very important to the project to demonstrate the effectiveness (or otherwise) of this approach. However, there has been a dearth of empirical studies analyzing the usage of games-based learning and general models of evaluation are currently lacking (Connolly, Stansfield, & Hainey, 2007) and this will have to be addressed early on in the project.

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