Alternate reality games and intergenerational learning

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ABSTRACT
One of the most significant discussions in convergence culture is whether the introduction of new media stems from the use of old media in new contexts, which often leads to changes in human behaviour. Meanwhile, the demographic ageing phenomenon has also had a significant impact on society and the use of technological devices by different generations has been asymmetric. Therefore, recent developments have heightened the need for a participatory culture and collective intelligence. However, these rapid social and cultural changes are having serious effects on the digital divide, generating an impact on the cooperation or the conflicts that may affect different generations. So far, little attention has been paid to the potential of alternate reality games to encourage intergenerational communication. The aim of this paper is to provide an initial reflection on how Alternate Reality Games (ARGs) can have an impact on intergenerational communication, collaboration and learning. This study focuses on the key terms of alternate reality games, communication, intergenerational learning, the psychological theory of human development and *transmedia* storytelling.

Author Keywords
Alternate reality games, intergenerational relationships, *transmedia,* learning, participatory culture

Classification Keywords
H.5.2. Information Interfaces and presentation User Interfaces – Interaction styles

INTRODUCTION
Intergenerational relationships play an important role in the individuals' physical, psychological and social health [1]. Recently there has been growing interest in the way which various forms of entertainment positively influence the older adults' self-esteem and quality of life [2-5].
The study of games and intergenerational relationships has become an important aspect of games studies and communication sciences in general [6, 7]. Although considerable research has been devoted to the design components that video games should have in order to engage different generations of gamers [7-10], rather less attention has been paid in the way alternate reality games and *transmedia* storytelling can encourage different generations (*e.g.* children and older adults) to immerse themselves in a collaborative, problem-solving and learning scenario.

The aim of this study is to look at the potential of ARGs to encourage intergenerational learning by addressing the main question: "In the age of the convergence of media, how can alternate reality games shape intergenerational learning?"

This paper is divided into seven sections. From the first to the sixth section, the paper briefly describes the concept of Alternate Reality Games (ARGs) and discusses its potential for intergenerational learning engagement. Collective social experiences, participatory thinking, cross-media learning and *transmedia* storytelling are also debated.

Finally, the challenges of the convergence of media, the further aspects that can encourage intergenerational learning through game playing and a proposal of an ARG are presented in the last section and the conclusions.

Throughout this paper, the term 'cross media' refers to the distribution of content in different platforms whereas the term '*transmedia*' is related with the interdependency of different media [11, 12], giving insight into the user experience as a whole.

1. ALTERNATE REALITY GAMES AND INTERGENERATIONAL LEARNING ENGAGEMENT
During the past few years, much more information has become available on Alternate reality games (ARGs). Previous studies have suggested that borrowing formal elements from games (*e.g.* goals, immediate feedback, rewards and rules) to real life increase the participation in society and expand learning experiences [13-15].

According to McGonigal [14:p.3] ARGs are "an interactive narrative, or immersive drama played out online and in real-world spaces taking place over several weeks or months in which hundreds, thousands, or 10's of thousands of players come together online to real play, not role play forming unusually collaborative social networks and working together to solve a mystery or problem that would be

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absolutely impossible to solve alone." In fact, ARGs push the boundaries of real-world experiences and fiction [16].

The convergence of "virtual reality" and "real virtuality" also occurs in our brain [17]. A virtual world, a *blog*, the Smartphone or even the neighbourhood and the street can be the game interface. Although the concept of reality is often blurred, in this paper, it is used to describe the process of putting abstract concepts/ideas into practice (even if it is in the physical or digital world). Indeed, the process of merging physical and digital spaces and abstraction and reality is what we call alternate reality.

Considering the fact that games invite learners to experience a narrative, solve problems, master and be immediately rewarded by their actions, ARGs have the potential to expand educational challenges and multiple literacies (*e.g* the literacies proposed by Bonsignore, Hansen, Kraus and others [18]: (a) gather; (b) make sense; (c) manage; (d) solve; (e) create; (g) respect; and (h) collaborate [18-20].

In today's society, the family structure is also changing and there is a gap between the young and the older generations, regarding their use of technological devices, the language used and consequently, their level of connectedness and intimacy [1]. That said, changes in these intergenerational networks are needed.

Voida and Greensberg's study [21] in collocated intergenerational console learning has reported that games have an important cultural role in crossing different generations and incite pro-social behaviours and peer-to-peer mentoring. However, managing the game controls and interfaces should be balanced in order to provide a similar optimal experience (the balance between the players' skills and the game challenges) [22] in different generations of players. Therefore, alternate reality games are likely to be appealing to both age groups, reinforcing their identities (affiliation and pride) [23] by merging the physical and the digital world.

Moreover, Erikson [24] draws our attention to distinctive conflicts and motivations observed in different stages of the individuals' psychological development. A convergence of natural interests is observed between the play age (between 3 and 6 years old) or school age (between 6 and 12 years old) and old age (65 to death). During the childhood play, narratives can stimulate imagination, initiative and curiosity whereas in the ageing process wisdom and storytelling are valued. Hence, game-mediated interactions are likely to be appealing to both age groups, reinforcing their identities (affiliation, pride and exchange) [23].

Before proceeding to discuss the importance of alternate reality in creating a collective social experiences and a participatory thinking culture, the characteristics of the audience (grandparents and grandchildren) are presented.

2.THE (GRAND) PLAYERS' INTERACTIONS

Life expectancy has been increasing over the years. According to the Eurostat Statistics Database [25], the average life expectancy in most European countries is 81.7 for women and 75.3 for men. As a result, both grandchildren and grandparents have the opportunity to participate in the lives of one another [26].

Although parents tend to trust in grandparents to provide childcare, geographic distance [23, 26] and parents' divorce [27] are likely to affect the quality of intergenerational relationships. Therefore, digital games can incite an episodic playful interaction and the dialog between generations.

Grandparents

The grandparents tend to have a strong desire to communicate more frequently with their children [28, 29], mainly through storytelling [29, 30]. This communication often aims at reinforcing family and cultural identity [31, 32], values, history [33] and traditions [34].

As we are living in an increasingly ageing society, grandparenthood tends to occur in later age. Changes in today's society (*e.g.* women's emancipation, the use of contraceptives) seem to lead to an increase in average age of parents and, consequently, grandparents. That said, age-related issues should be considered when addressing interfaces to the older target groups.

Regarding the legal aspect, an older adult can be defined as an individual aged 65 or over and this indicator is used by 75% of world countries [35]. However, this standard chronological age indicator is insufficient to encompass biological, cognitive, psychological and social effects of the ageing process.

Digital games seem to reinforce cognitive stimuli and pride of grandparents toward grandchildren's achievements. Hence, intergenerational play can stimulate grandparents' self-esteem, quality of life and sense of connectedness.

Grandchildren

In childhood, play, imagination, curiosity and initiative are likely to be perceived. In fact, according to Erikson [24], children experience two types of play. On the one hand, they interact with others – 'the social play' and, on the other hand, they imagine their pretend games while they play - 'the fantasy play'.

The children behaviour and their skills vary according to their age [24]:

- 3 - 5 years old: At the age of 3, children tend to imitate, play and develop their capacity to communicate. They often cooperate, taking turns. Whereas at the age of 4 they have mastered the use of buttons, at the age of 5, they are more aware of the world, creating a self-identity, starting to focus on details, and accomplishing intellectual activities;

- 6 – 12 years old: At this age bracket, children are more aware of taking responsibilities and being efficient in accomplishing their tasks. The concepts of space and time are logically understood and they develop such complex skills as reading, writing, solving problems and drawing.

Then, after these ages, the period of adolescence begins. In this period, individuals tend to establish an identity and affirm their independence. Their brain responds to physical changes, hormonal production, behaviours and emotions [24]. For this personal growth, it is also important the transmission of family values and past stories or experiences, which can be transmitted by older generations.

3.INTERGENERATIONAL LEARNING

It is suggested that the first study to look at the relationships that are established between different generations emerged during 1928 with Karl Manheim [36]. Nonetheless, it is only during the 80s that much more information has become available on intergenerational studies [36].

According to the European Network for Intergenerational Learning [36], intergenerational learning can be defined as a 'reciprocal exchange of knowledge between people of all ages so that they can learn together, and learn from each other and from those in a variety of sectors, such as culture, environment, sociability, education, mediation, prevention, recreation, ICT; …'

Overall, a learning outcome is often emphasized in the purpose of intergenerational relationships. In a study of intergenerational learning and grandparents in East London [37], the authors have revealed that the activities in which grandchildren and grandparents were most engaged in were: (a) talking about members of the family and history; (b) religious activities; (c) shopping and; (d) playing. Thus, the activities that encourage cultural heritage and the transmission of values and knowledge are likely to be well accepted.

The same study [37] also draws our attention to the fact that touch has a significant role in building trust and kinaesthetic learning experiences. Hence, designing the game space and the platform to run the ARG activities is crucial in order to affect the learning experience.

4. A COLLECTIVE SOCIAL EXPERIENCE

Alternate reality games are a collective social experience. The philosophy of these games - TINAG (This is not a game) is an example of this assumption. The team of game developers invites their players to focus on the game universe, overlooking their routine and the distractions of real life. It is a minded game in a network society (real actors, evocative places and fictional challenges).

In *The Rise of a Network Society: The Information Age: Economy, Society and Culture*, Manuel Castells [38:p.375] points out that in this connected culture of real virtuality, "make belief is belief in the making". This view is also supported by Lévy [39:p.72] who writes: "virtualization is one of the principal vectors in the creation of reality". In fact, in ARGs a collective belief experience defines the game rules in order to be closer to the reality.

Another characteristic of alternate reality games are the 'rabbit holes'. Similar to *Alice in Wonderland adventures* as described by Lewis Carroll, 'rabbit holes' in ARGs are the initial sites or portals that invite the players to emerge into the alternate reality. The entrance to the fictional reality is easier to discover than the exit – and that is the main feature of this persistent world (A world that continues in the players' mind).

The interplay also occurs between the 'puppet masters' (producers) and the players. The audience changes the rules, defines its challenges and shares the meaning of the game. Overall, a 'communitarian buzz' [40:p.41] is generated and citizen participation, social movements and privacy are influenced by dynamic, public and evocative spaces.

Social identities are embodied and there is a decentralized authority in producing, using and interpreting these ludic artefacts. However, this decentralized power of the network in games is also crucial to affect (grand) child - (grand) parents' relationships of authority [41].

5. PARTICIPATORY THINKING AND CROSS-MEDIA LEARNING

Traditionally, it was widely believed that spreading the same content over multiple media would generate a rich experience of reality. Nowadays, it is known that the circulation of information across multiple platforms is not enough. Only giving a new insight, expanding the current knowledge and introducing anything new with the spread of that content across new media is the way to provide an immersive and credible experience.

In addition, a convergence culture is also participatory [13] and imposes cognitive complexity [29]. Different types of media activate different parts of the brain and enhance our skills (*e.g.* imagination, decision-making, logic, etc.), releasing dopamine (*e.g.* in games), opioid (*e.g.* in music) and other neural substances [42].

In the game world, there is also a user-generated culture. Players tend to modify the software (*modders*), expand the narrative of games with collective stories, and form social groups. Nevertheless, this interaction with other participants follows a set of rules [13] defined or assured by the fan community.

As regards to games as learning platforms, Gee [43] points out that society can benefit from games to learn. According to the author, the game cycle begins with a challenge and it encourages the practice and knowledge creation until the master phase. In contrast to the evaluation school system in which there is a disruption of the mentioned process with a

written test, games proceed with a new challenge that incorporates the skills mastered previously by the player.

Furthermore, peer-to-peer learning is likely to incite the students' mentorship, co-creation of knowledge artefacts and create a social identity. In addition, educational formal systems often fail with the identity principle (explaining in which way a certain piece of knowledge is important to the learners' life) whereas games can be beneficial at showing the immediate consequences or results of actions and modes of thinking.

6. *TRANSMEDIA* STORYTELLING

As was pointed out in the introduction of this paper, the term t*ransmedia* refers to the connection of different media (either analog or digital) aimed at giving a new insight into certain content.

When applied to storytelling, different media are connected in order to provide an additional experience of consuming, interpreting, modifying and telling the whole story. Currently, the process of telling stories is not only confined to authors but also involves the audience in the task, often through solving puzzles.

According to Jenkins [13:p.97], *transmedia* storytelling is related with a story that 'unfolds across multiple media platforms, with each new text making a distinctive and valuable contribution to the whole."

The author Pratten [11] divides *transmedia storytelling* into two types:

- *Franchise transmedia* occurs when different pieces of the same story are spread across multiple media. For example, the stories of Assassins Creed, Star Wars and The Lord of the Kings are presented in books, movies and games;
- *Portmanteau transmedia* occurs when one single story is expanded across different media. An example of this type of *transmedia* storytelling is ARGs.

The combination of 'old media' (*e.g.* press, cable TV, radio) and 'new media' (*e.g.* Internet, mobile devices, iPTV, digital games) to tell the story – tend to augment the users' participation and interaction with content. In fact, their actions can move forward, backward, pause, stop and even change the course of the narrative.

A *transmedia* storytelling experience can bring different generations together and encourage curiosity, exploration, problem solving and a meaningful play. According to Salen and Zimmerman [44], 'meaningful play' is the ultimate goal of every game design.

As Salen and Zimmerman [44:p. 60] state: "Playing a game means making choices and taking actions. All of this activity occurs with a game system designed to support meaningful kinds of choice making. Every action taken results in a change affecting the overall system of the game."

Simply put, through *transmedia* storytelling, ARGs can: (a) set enigmas and challenges into motion; (b) put fiction and imagination into real worlds; and (c) embed and distribute meaning to places, characters, people and current events.

7. PROPOSAL OF AN ALTERNATE REALITY GAME (ARG) TO ENCOURAGE INTERGENERATIONAL LEARNING

In this section, we present a proposal of an alternate reality game (ARG) applied to a medieval journey. This game can be applied to the medieval events in Portugal (adapted to the historical context).

In this example, we adapted the historical re-enactments of the medieval journey in Santa Maria da Feira (www.viagemmedieval.com) to an alternate reality game that involves grandparents and grandchildren in order to solve the puzzles of each mission.

The game is under development to the tablet platform and it uses Augmented Reality and location awareness. The ARG starts with the presentation of the sequences (Figure 1) and by entering in each sequence, the players can interact with the map, learning objects and game characters (Figure 2).

Figure 1 – Game menu (sequences - historical re-enactments of the medieval journey)

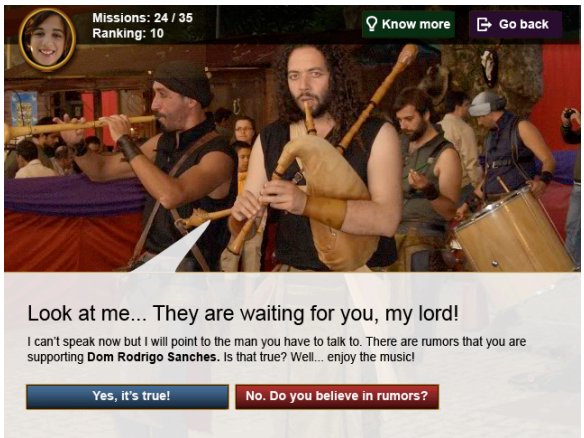

Figure 2 – Interaction with a game character

It is our aim to encourage the interactions between different generations with local history, traditions and heritage with the ARG. Finally, the main conflict is a person versus environment (PvE) in order to balance the skills of both players (grandparents and grandchildren) with different skills and optimize their game experience.

FINAL THOUGHTS

In reviewing the literature, data were scarce in terms of the association between ARGs and intergenerational learning. Hence, this paper set out to assess the way alternate reality games can shape intergenerational learning, in the age of the convergence of media.

This study has suggested that ARGs can shape intergenerational learning by: (a) fostering collective social experiences either *in loco* or in cyberspace; (b) creating knowledge artefacts as a result of the players' relationships; (c) encourage the seven core literacies proposed by Bonsignore, Hansen, Kraus and Ruppel [18] – gather, make sense, manage, solve, create, respect and collaborate; and (d) provide a *transmedia* storytelling experience.

Although it has been argued that ARGs can foster connectedness between generations and encourage media literacy, this statement must be interpreted with caution. There is a *pharmakon* phenomenon. On the one hand, ARGs can bring many benefits for society but, on the other hand: (a) addictive experiences; (b) identity crises; and (c) disparities in (grand) child - (grand) parents' relationships of authority [41] can emerge.

One question that needs to be asked, however, is whether ARGs will, in fact, encourage a collective experience and the participatory thinking or, on the contrary, competition and conflicts between generations. This is an important issue for future research.

In a nutshell, further work needs to be done to respond the ways younger and older generations interact with one another with story content and how they attribute meaning to information and adhere to the new modes of play and participation in today's society.

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REFERENCES

1. Harwood, J. (2007). Understanding communication and aging: Developing knowledge and awareness. Sage.

2. McGuire, F. A. (1984). Improving the quality of life for residents of long term care facilities through video games. Activities, Adaptation & Aging, 6(1), 1-7.

3. Harwood, J. (1999). Age identification, social identity gratifications, and television viewing. Journal of Broadcasting & Electronic Media, 43(1), 123-136.

4. Coffman, D. D. (2002). Music and quality of life in older adults. Psychomusicology: A Journal of Research in Music Cognition, 18(1-2), 76.

5. Torres, A. C. S. (2011). Cognitive effects of video games on old people. International Journal on Disability and Human Development, 10(1), 55–58.

6. Aarsand, P. A. (2007). Computer and Video Games in Family Life The digital divide as a resource in intergenerational interactions. Childhood, 14(2), 235-256.

7. Khoo, E. T., Merritt, T., & Cheok, A. D. (2009). Designing physical and social intergenerational family entertainment. Interacting with computers, 21(1), 76-87

8. Davis, H., Vetere, F., Gibbs, M., & Francis, P. (2012). Come play with me: designing technologies for intergenerational play. Universal Access in the Information Society, 11(1), 17-29.

9. Mahmud, A. A., Mubin, O., Shahid, S., & Martens, J. B. (2010). Designing social games for children and older adults: Two related case studies. Entertainment Computing, 1(3), 147-156.

10. Derboven, J., Van Gils, M., & De Grooff, D. (2012). Designing for collaboration: a study in intergenerational social game design. Universal Access in the Information Society, 11(1), 57-65.

11. Pratten, R.(2011). Getting Started with Transmedia Storytelling. CreateSpace.

12 Schell, J. (2008). The Art of Game Design: A book of lenses. Taylor & Francis US.

13. Jenkins, H. (2006). Convergence culture: Where old and new media collide. NYU press.

14. McGonigal, J. (2011). Reality is broken: Why games make us better and how they can change the world. Penguin. Com

15. O'Hara, K., Grian, H., & Williams, J. (2008). Participation, collaboration and spectatorship in an alternate reality game. In Proceedings of the 20th Australasian Conference on Computer-Human Interaction: Designing for Habitus and Habitat (pp. 130-139). ACM.

16. McGonigal, Jane (2004): "Alternate Reality Gaming: Life imitates ARG", PowerPoint presentation to MacArthur Foundation Board of Directors, November 2004, available at http://goo.gl/Lf9iyO (Accessed on 28th July 2014)

17. Mioduser, D. (2005). From real virtuality in Lascaux to virtual reality today: Cognitive processes with cognitive technologies. From orthography to pedagogy: Essays in honor of Richard L. Venezky, 173-192.

18. Bonsignore, E., Hansen, D., Kraus, K., & Ruppel, M. Alternate Reality Games as Platforms for Practicing 21st

Century Literacies. International Journal for Learning and Media,(in-press).

19. Moseley, A., Whitton, N., Culver, J., & Platt, K. (2009). Motivations in alternate reality gaming environments and implications for education. In *Proceedings of the 3rd European conference on game-based learning*

20. Whitton, N. (2008). Alternate reality games for developing student autonomy and peer learning.

21. Voida, A., & Greenberg, S. (2012).Console gaming across generations: Exploring intergenerational interactions in collocated console gaming. Universal Access in the Information Society, 11(1), 45-56.

22. Csikzentmihalyi, M. (1991). Flow: The psychology of optimal experience (Vol. 41). New York: HarperPerennial.

23. Harwood, J., & Lin, M.-C. (2000). Affiliation, pride, exchange, and distance in grandparents' accounts of relationships with their college- aged grandchildren. *Journal of Communication*, *50*(3), 31–47.

24. Zastrow, C., & Kirst-Ashman, K. K. (2007). *Understanding human behavior and the social environment*. CengageBrain. com.

25. OECD (2012), "Life expectancy and healthy life expectancy at birth", *in Health at a Glance: Europe 2012,*

26. Uhlenberg, P., & Kirby, J. B. (1998). Grandparenthood over time: Historical and demographic trends. *Handbook on grandparenthood*, 23-39.

27. Drew, L. M., & Smith, P. K. (2002). Implications for grandparents when they lose contact with their grandchildren: Divorce, family feud, and geographical separation. *Journal of Mental Health and Aging*.

28. Lindley, S. E., Harper, R., & Sellen, A. (2009). Desiring to Be in Touch in a Changing Communications Landscape: Attitudes of Older Adults. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp.1693–1702). New York, NY, USA: ACM. doi:10.1145/1518701.1518962

29. Ryan, E. B. (1994). Intergenerational communication: Evaluations and analyses of talk exchanged between older adults and younger adults. *The International Journal of Aging and Human Development*, *39*(1), 1–3.

30. Ryan, E. B., Pearce, K. A., Anas, A. P., & Norris, J. E. (2004). Writing a connection: Intergenerational communication through stories. *Family stories and the life course: Across time and generations*, 1–24.

31. Kornhaber,A.,&Woodward,K.L.(1985).*Grandparents, grandchildren:The vital connection*. Transaction Publishers.

32. Kalliopuska,M.(1994).Relations of retired people and their grandchildren. *Psychological Reports*, *75*(3), 1083-1088.

33. Brussoni, M. J., & Boon, S. D. (1998). Grandparental impact in young adults' relationships with their closest grandparents: The role of relationship strength and emotional closeness. *The International Journal of Aging and Human Development*, *46*(4), 267–286.

34. Wiscott, R., & Kopera-Frye, K. (2000). Sharing of culture: Adult grandchildren's perceptions of intergenerational relations. *International Journal of Aging and Human Development*, *51*(3), 199–216.

35. United Nations (2003). Population aged 60 years or over. *Publications of the UN Population Division.*

36. European Network for Intergenerational Learning (2012) Intergenerational learning and Active Ageing. EU report.

37. Kenner, C., Ruby, M., Jessel, J., Gregory, E., & Arju, T. (2007). Intergenerational learning between children and grandparents in East London.*Journal of Early Childhood Research*, *5*(3), 219-243.

38. Castells, M. (2011). The rise of the network society: The information age: Economy, society, and culture (Vol. 1). Wiley. com.

39. Youngman, P. A. (2009). We are the Machine: The Computer, the Internet, and Information in Contemporary German Literature (Vol. 41). Camden House.

40. Heim, M. (1998). Virtual realism. Oxford University Press.

41. Mesch, G. S. (2006). Family characteristics and intergenerational conflicts over the Internet. Information, Communication & Society, 9(4), 473-495.

42. Johnson, S. (2006). Everything bad is good for you. Penguin.

43. Gee, J. P. (2003). What video games have to teach us about learning and literacy. Computers in Entertainment (CIE), 1(1), 20-20.

44. Salen, K., & Zimmerman, E. (2005). Game design and meaningful play. Handbook of computer game studies.