Best Practices for Deploying Digital Games for Personal Empowerment and Social Inclusion

Lizzy Bleumers[1], Ilse Mariën[1], Jan Van Looy[2], James Stewart[3], Dana Schurmans[1] and Anissa All[2]

[1] iMinds-SMIT-VUB, Brussels, Belgium
[2] iMinds-MICT-UGent, Ghent, Belgium
[3] JRC-IPTS, Seville, Spain

lbleumer@vub.ac.be
imarien@vub.ac.be
j.vanlooy@ugent.be
james.stewart@ec.europa.eu
dana.schurmans@vub.ac.be
anissa.all@ugent.be

Abstract: Digital games are being increasingly used in initiatives to promote personal empowerment and social inclusion (PESI) of disadvantaged groups through learning and participation. There is a lack of knowledge regarding best practices, however. The literature on game-based learning insufficiently addresses the process and context of game-based practice and the diversity of contexts and intermediaries involved in PESI work. This paper takes an important step in addressing this knowledge gap using literature review, case studies, and expert consultation. Based on our findings, we formulate a set of best practices for different stakeholders who wish to set up a project using digital games for PESI.

The seven cases in point are projects that represent various application domains of empowerment and inclusion. Case studies were conducted using documentation and interviews, covering background and business case, game format/technology, user groups, usage context, and impact assessment. They provide insight into each case's strengths and weaknesses, allowing a meta-analysis of the important features and challenges of using digital games for PESI. This analysis was extended and validated through discussion at two expert workshops.

Our study shows that a substantial challenge lies in selecting or designing a digital game that strikes a balance between enjoyment, learning and usability for the given use context. The particular needs of the target group and those that help implement the digital game require a highly specific approach. Projects benefit from letting both intermediaries and target groups contribute to the game design and use context.

Furthermore, there is a need for multi-dimensional support to facilitate the use and development of game-based practice. Integrating game use in the operation of formal and informal intermediary support organisations increases the chances at reaching, teaching and empowering those at risk of exclusion. The teachers, caregivers and counsellors involved in the implementation of a game-based approach, in turn can be helped through documentation and training, in combination with structural support.

Keywords:

game-based learning, empowerment, inclusion, digital games, best practices

1. Introduction

Empowerment, digital and social inclusion are important strategic policy goals of several EU policy agendas and initiatives. In light of these goals, different stakeholders are seeking to understand the opportunities of innovative ways of learning and participation as possible pathways to improve employability, health, well-being and civic engagement. Digital games, which are already being advocated as learning tools and which have become part of a participatory culture, seem promising candidates for empowerment and inclusion initiatives.

The recognition of the dual nature of play as instrumental and fun (Schouten, 2011) has encouraged various stakeholders to consider digital games as an engaging means to induce change (knowledge and skill acquisition, attitudinal, behavioural or social change). In 2011, the Digital Games for Empowerment and Inclusion (DGEI) project was set up to identify opportunities and challenges for those seeking to harness the potential of digital games for empowerment and inclusion and to make recommendations for research and policy (Bleumers et al, 2012; Stewart and Misuraca, 2012; Stewart et al, 2013).

1.1 Key Concepts

In this study, we adopt a common interpretation of *personal empowerment* as a community-supported process of individual change "whereby individuals achieve increasing control of various aspects of their lives and participate in the community with dignity" (Lord and Hutchison, 1993: 4). *Social inclusion* is closely related to personal empowerment, focusing more on increased participation or re-integration in society (Notley and Foth, 2008; Wright and Wadhwa, 2010). This participation is multi-dimensional and encompasses production, political, social, consumption and savings activity (Atkinson, 1998; Selwyn, 2002).

1.2 Empowerment and Inclusion through Game-based Learning and Participation

Digital games are used in a variety of sectors and for diverse purposes beyond entertainment (Sawyer & Smith, 2008). With regard to social inclusion, games are already being used in three domains: supporting disengaged and disadvantaged learners and enhancing employability, promoting health and well-being, and fostering civic participation and community engagement.

The common assumption underlying most of these initiatives is that games are motivational, learning and participatory tools. The way these tools are put to use varies whereby roughly three approaches can be distinguished: (1) using games that were specifically developed for learning and/or participation (special-purpose); (2) harnessing learning and participation in well-designed commercial off-the-shelf games (COTS); (3) fostering learning and participation by (co-)creating and modifying digital games.

We need to be cautious of uncritical accounts of game-based empowerment and inclusion, however. While we see that there is access to, interest in and usage of digital games among at-risk youth in particular (Royle and Colfer, 2010; Karabanow and Naylor, 2010), game play in itself is a skill that requires mastery in which support might be needed (Jenkins, 2009). Intrinsic motivation to play games is not a given. Furthermore, interest in digital games may be highly specific (Ortiz, 2009). Ito and Bittanti (2010) have noted the presence of generational and socio-economic divides in the more committed forms of game-play that form pathways to interest-driven learning.

1.3 Addressing Knowledge Gaps

Reviewing academic research on game-based learning and participation, we see a prevalence of studies addressing the usage and impact of games in formal learning settings such as schools and universities (e.g. Squire and Barab, 2004; Khaled, 2011). PESI interventions often take place outside mainstream education, however, in contexts where learning takes place through more general activities or even unintentionally. Here we find that there is a dearth of scientific study and evidence on the outcomes and conditions of game use, and the dynamics of innovation in game development and use.

We also note a focus in the literature on the content and characteristics as deterministic of the effectiveness of a game. While acknowledging this as an important factor, there are many other factors that determine the impact of the use of a game on a population, such as training, availability of assessment tools, business model, institutional support and barrier, which appear to be handled and understood far less in academic literature.

In this paper, we address these knowledge gaps. Through case studies, combined with literature review and expert interviews, and through expert workshops, we explore issues of use and impact, but also cover aspects of the implementation approach and processes such as the role of the intermediaries (e.g. social workers).

2. Case Studies

We conducted an analysis of game-based PESI cases. The characterization of each of the cases allowed us to identify the main drivers and barriers encountered by the involved stakeholders.

2.1 Methodology

Seven projects were selected that met a range of set criteria. First, cases needed to represent various application domains of empowerment and inclusion (namely, education and employability, well-being, and civic and community engagement). Secondly, we looked specifically for well-documented cases, providing us with the necessary information to do an analysis. Cases were also required to demonstrate interaction among

various actors surrounding game usage (such as game developers and social support organisations) as our analysis was geared towards understanding game-based PESI practices and their dynamic context. In this sense, our case studies are distinct from (game) content analysis. We did not conduct an in-depth analysis of the games' content, nor did we focus on the games per se. Finally, cases ideally also demonstrated some form of impact. Impact assessment practices were of interest to us both from a research perspective (i.e. methods used) as well as from an evidence-based policy perspective (i.e. what is being done and where is support needed).

In addition, cases were chosen to achieve diversity in terms of type of digital game usage (special-purpose, commercial off-the-shelf, and game making), geographical origin, targeted group (general public, university staff, ill teenagers, etc.) funding (public, private, mixed), hardware and gameplay design. Finally, cases were not required to represent best practice, as insight in encountered obstacles would also be informative.

Selected cases were based on the following games:
1. **PING** (Grin Multimedia): Adventure game aimed at raising awareness about poverty and social inclusion among young people (13 – 18y)
2. **InLiving** (Grassroots Learning): Role-playing game aimed at promoting independent living among young (prospective) tenants (16-25y)
3. **At-Risk** (Kognito Interactive): Avatar-based simulation game that enables faculty staff to identify and refer students in psychological and mental distress
4. **Choices and Voices** (PlayGen): Short role-playing games that help school children between 12 and 18 years old to explore issues that might lead to tension and violence
5. **Starbright world** (Schematic, Userplane, & Starlight Children's Foundation): Online social network that allows chronically ill youngsters (13-20y) to express themselves and exchange experiences
6. **CivWorld** (Firaxis)**:** Multi-player strategy game for Facebook users that facilitates learning about Western History and encourages strategic thinking
7. **Gamestar Mechanic** (E-Line Media & Institute of Play)**:** Platform for playing, creating and sharing games directed at 8 to 14 year olds and their teachers via an online teacher community

Each case represents a unique aspect of PESI. Together, the cases illustrate the diversity of the field, covering poverty awareness (case 1), independent living (case 2), depression and suicide prevention (case 3), violence prevention (case 4), community support for chronically ill (case 5), history education and strategic thinking (case 6), digital media literacy and motivating STEM (Science Technology Engineering Math) learning (case 7).

To investigate these cases, an informational outline was drawn based on the literature and specific needs for this study. Areas of interest were project background and organisational structure (consortium, developer, funding), description (objectives, target audience, game format, technology, use context), and impact (effectiveness and reach). Next, we completed the outline for each case based on publicly available information (i.e. game websites, other online documentation, academic literature; see Bleumers et al, 2012) complemented by expert interviews when needed (n=3).

2.2 Findings

Table 1: Overview of the seven cases.

		Project background	Use context	Impact assessment	Key factors
1. PING		▪ Initiation: foundation and research institute ▪ Poverty organisations & schools ▪ Game developer ▪ Government	▪ Primarily developed for classroom usage ▪ Can also be played at home (online or downloadable for free)	▪ Pre-release field-tests ▪ Online data analytics ▪ Longitudinal data by way of pre-, post and follow-up surveys	+ Teacher toolkit + Attention to fun aspect + Extensive user research - Lack of marketing

	Project background	Use context	Impact assessment	Key factors
2. InLiving	▪ Initiation: neighbour-hood housing org. partnered with mobile game developer ▪ Business service provider, housing org. ▪ Government	▪ Formal education system ▪ Informal social structures, (e.g. social housing)	▪ In-game questionnaire system	+ Participatory design + Embedded in (in)formal intermediary support structures - Maintenance: game developer went bust
3. At-Risk	▪ Initiation: games and simulations developer partnered with mental health association ▪ Health service providers ▪ Government	▪ Formal learning context, namely high schools, colleges and universities	▪ Built-in progress and assessment tools ▪ Longitudinal data by way of pre-, post and follow-up surveys	+ Customization enables aligning with local needs + Assessment built-in - Top-down approach focused on access - Limited play time
4. Choices & Voices	▪ Initiation: Game developer co-designed game with ▪ Police unit ▪ University ▪ Government ▪ Local schools	▪ Formal educational context, i.e. classroom	▪ Qualitative impact assessment of experience and perceived usefulness ▪ Structured group discussions	+ Multi-stakeholder + Teachers as guides + Integration in educational curricula - Lack of specific data on actual learning & change
5. Starbright World	▪ Initiation: Children's foundation supported by industry ▪ Interactive agency ▪ Integrated messaging platform provider	▪ Informal context: hospital, at-home, anyplace anywhere	▪ Pre- and posttest ▪ Pilot with 9 replicated single system designs	+ Multi-dimensional platform + Programme recognition + Extensive user research + Collaboration with e.g. hospitals for distribution
6. CivWorld	▪ Initiation: Game company ▪ Middle school students	▪ At home ▪ At school ▪ In after-school programmes	▪ None (anecdotal, user led)	+ Exploit commercial distribution + Community of practice - Lack of assessment - Simplified game system = less play time, less system thinking
7. Gamestar Mechanic	▪ Initiation: researcher & game developer ▪ Foundation ▪ Designer & Publisher of game-based learning products & services	▪ At school ▪ In after-school programmes ▪ In community centres or libraries	▪ Discourse-based design ethnography	+ Sustainable publishing strategy + Focus on transferrable digital skills

Table 1 illustrates the diversity that characterizes the seven reviewed cases in terms of project background (i.e. initiation and partners involved), the context to which the games are introduced, and the way in which impact was assessed. Initiators who lay the groundwork for game-based PESI initiatives vary from case to case. Intermediary organisations, game developers, researchers and foundations all appear as initiators. In most cases, partnerships are built to secure sufficient funding (i.e. a mix of private funding, grants and sponsorships), to obtain additional expertise and resources, and to distribute the games. Whereas some cases exclusively focus on school-based use, the majority target a broader usage context including after-school programmes and home usage. The most marked differences are evident for impact assessment. Cases differ in

terms of the extent to which they were assessed, data collection methods (e.g. in-game vs. out-of-game assessment), timing of assessment (e.g. longitudinal vs. single time-point) and operationalization of impact (e.g. number of participants, game experience and/or learning).

The last column of Table 1 shows the main drivers and barriers that we derived from the case studies. These key determining factors point us towards a first set of best practices for game-based PESI initiatives:

1. **Balance learning outcomes and a fun gaming experience**: A positive game experience is crucial to ensure take-up. Positive game experiences result in a higher level of perceived learning, and a higher level of motivation to participate.

2. **Adopt a user-driven approach to create game content, game play and to define valid outcomes**: Multi-stakeholder involvement, including intermediaries and end-users, throughout the design process taps into and acknowledges stakeholders' various forms of expertise. Customizable game-based approaches allow users to tailor the game experience to their local, particular needs.

3. **Include a clear plan for publishing, marketing and distributing the game-based approach:** People at-risk are often reached through intermediary organisations that guide and contextualize the use of digital games, promoting usage and the attainment of empowerment goals. Therefore, to ensure deployment and a sustainable impact, a detailed plan is needed on how to make the game accessible to them and to support them in implementing it (e.g. public prevention and educational programmes). In the case of Gamestar Mechanic, for instance, the involvement of a publisher provided partners with a much-needed publishing strategy, while another partner created a guide for helping teachers implement the game in their classes.

4. **Integrate assessment mechanisms in the game and for the overall project**: Built-in progress and assessment tools can support learning through personalized feedback. For example, a drawback of Choices and Voices is the lack of knowledge about its users' actual learning curve and behavioural change. In addition, research evidence showing that digital games contribute to PESI can improve the attitude towards using them and hence, lead to an increase in funding, deployment and use.

3. Expert Workshops

Two expert workshops were organised to identify challenges and opportunities for game-based PESI initiatives and to pinpoint priority issues for this sector.

3.1 Methodology

Experts were selected based on literature review and snowball sampling, as there is no clear, pre-existing community of experts working in the field of digital games and social inclusion. We invited both gaming experts and experts in PESI application domains such as migrant integration and remedial education from academic, industry and NGOs, ensuring a geographic and gender balance (Stewart et al, 2013).

The procedures followed in both workshops were modified versions of the Technology Foresight expert panel methods (JRC-IPTS, 2007). In fields where there is little documented practice or clear research pathways, this methodology enables identification of the state of knowledge, and primary issues, challenges and opportunities through interactive discussions with experts (Scapola and Miles, 2006). It supports building consensus and helps validate a research policy agenda in a short period of time. In each workshop, we introduced the project goals, the policy interest, and the project findings. Each participant presented his or her work briefly after which a common vision(s) of digital games for empowerment and inclusion was developed, and challenges and opportunities for meeting those visions were identified.

The first workshop (in January 2012, 34 participants) involved three exercises. In the first exercise, a role-playing brainstorming technique was applied whereby participants explored two social inclusion scenarios from the perspectives of different stakeholders (i.e. the use of a digital game to instruct first-time tenants, and another on migrant integration support). This laid the groundwork for a second exercise, during which participants brainstormed about challenges and opportunities regarding the use of digital games for

empowerment and inclusion. Resulting issues were then visually arranged by volunteers from the group, and subsequently reanalysed by the research team to identify clusters of issues. In the third exercise, participants worked in groups to delineate a 'Big Issue' to be tackled. In addition to articulating further opportunities of using digital games in PESI projects, they developed narratives and/or storyboards for a particular use case. As part of this exercise, they were encouraged to identify key intermediaries and their motivations, resources, and structural situation. They reflected on commercial and policy implications, and finally established time frames in which these scenarios could occur and the risks that would be involved.

The second workshop (in October 2012, 27 participants) aimed to validate earlier findings and build consensus as to priorities and potential actions between stakeholders from industry, practice, research and policy. Drawing from earlier project findings and participants' experience as presented and discussed during this workshop, participants selected by vote the three priority issues out of seven identified, and reflected on potential actions to address these issues, who would be involved in those actions, and their timeline.

3.2 Findings

During the first workshop, experts identified three key societal challenges where integrating digital games could benefit PESI projects: support for migrant integration, for marginalised young people, and for improving the quality of life of older people. They identified over a hundred opportunities and challenges. Table 2 highlights key findings in this respect.

Table 2: Highlighted opportunities and challenges for game-based PESI projects as identified in Workshop 1.

Opportunities	Challenges
▪ Potential of new mass market technologies to reach excluded populations, particularly through mobile devices	▪ Low awareness and negative stereotypes of game use
▪ High and growing acceptance of games and gaming, in some target groups such as young people	▪ Lack of knowledge, skills and institutional support among PESI stakeholders
▪ Strength of games to support customized learning through multiple mechanisms	▪ Low quality and/or sustainability of many game-based PESI projects, often due to funding scheme, lack of expertise, or lack of team-based design
▪ Strong potential of games-based approaches to re-engage disengaged learners, inside and outside of formal education	▪ The lack of human and institutional capacity to develop game-based PESI projects and distribute special-purpose game products
▪ Games allowing people to experience failure safely	▪ Lack of impact assessment tools and lack of evidence for effectiveness
▪ Exploitation of commercial off-the-shelf games and usage of game-making techniques	▪ Knowledge gaps in how games can be used effectively and in how to navigate the context of use
▪ Using games and gaming to improve efficiency and effectiveness of intermediaries	▪ Lack of people trained in the development and use of digital games

Good practice was identified as programmes and projects that address the challenges listed in Table 2, in particular by: (1) providing impact assessment and assessment tools to support decision makers and users to recognise the value of game-based approaches, and (2) engaging professional intermediaries such as teachers and social workers in the design, implementation and support of game-based PESI initiatives in a sustainable form, rather than through short term, one-off research-based projects. Significantly, stand-alone special-purpose games were never seen as the solution to the issues in the workshop scenarios. Rather, games and play elements were seen as tools for improving services linked to employers, social services and informal education services.

Drawing on this, the second workshop identified the following priority issues: (1) the need to address the image of games and challenge stereotypes, (2) the lack of evidence of impact conditions for effective use of game-based approaches and the importance of developing methods for gathering evidence and demonstrating impact, and (3) the low level of development of the supply sector and high barriers to distribution and use.

These workshops provided many pointers towards issues that need to be addressed by good practice in game-based PESI development and use, particularly around building sustainable production and use models, engaging intermediaries in design, providing evidence and training, and tackling structural barriers to game use.

4. Best Practices

Based on the findings discussed in the earlier sections, we can provide an outline of best practice in game-based PESI initiatives. What appears essential for the successful usage of games for empowerment and inclusion, overall, is a multi-stakeholder, project-based approach. We will first discuss this approach and then posit a set of requirements that can serve as guidelines for these projects from funding to follow-up.

4.1 Project-based and Multi-stakeholder Approach

Social exclusion can be understood as a multi-dimensional and dynamic process, situated in a community context, encompassing civic, economic, social and interpersonal disintegration (Phipps, 2000). To appropriately and effectively address the complex nature of this issue, an integrated set of various forms of expertise, tools and activities is needed. As a consequence, the usage of digital games should be conceived of as being one part of a multi-stakeholder and project-based approach, where the success of the project critically depends on each facet of the project context, not merely the qualities of the game. The cases we reviewed clearly illustrate this.

Central to PESI projects are the people at risk themselves. While it may seem logical to see *at-risk groups* primarily as adopters, i.e. the target or end-users whose situation one seeks to improve, this is a reductive interpretation. It fails to acknowledge the possibility that people at risk can shape PESI projects by acting as representatives of their group throughout the project.

To ensure participation of those at risk, intermediary organisations play a major role. Through the trust relationship *intermediaries* maintain with at-risk groups, they are well aware of the struggles, skills and interests of this audience. Intermediaries can signal the demand for (game-based) PESI initiatives, or act as domain experts in these projects. They are gatekeepers that can introduce a game-based initiative to people that might otherwise be hard to reach, as well as guide, motivate and facilitate the empowerment of participants in these initiatives.

To achieve their fullest potential, intermediary organisations themselves need support, as they often lack relevant assets and capabilities such as knowledge on how to implement games in their everyday practice, game design and publishing expertise, financial resources, and so on. An exchange of resources can be made possible by arranging partnerships between these organisations and game developers, publishers, research and funding organisations. Whereas *game developers* have the means to create engaging games, *researchers* can support evidence-based game design. They also have the expertise to monitor and evaluate PESI initiatives. This has the added benefit of not needing to place intermediaries in the role of assessor, potentially compromising the relationship they have with their target group. *Actors with publishing expertise* can provide the know-how needed to market and scale up a local PESI initiative. *Funding organisations* can contribute to a budget not only for game development, but also for manuals on how to play and deploy the games, impact assessment, and project follow-up. This requires that each of these components were already considered in the project plan, which we will discuss in the following section.

4.2 Requirements for Game-based PESI projects

Identifying the key components to the successful implementation of game-based PESI initiatives is a work-in-progress. Here we propose a set of requirements, drawn from our study's findings.

Successful game-based PESI projects address concrete needs of both end users and professional intermediaries. User research (incl. domain analysis and UX research) prior to game development facilitates such needs alignment. In addition, creating a game concept and outline should take place in close collaboration with these actors. Finally, foreseeing customizability of the game-based approach enables users to adapt it further to their preferences later on. By giving this stage in the development process sufficient attention, drastic and costly changes during actual production can be avoided. It is advisable to make a highly detailed game design document and development plan so as to keep the production time low.

While a positive game experience is important for take-up, it does not guarantee successful diffusion of the game. Again strong partnerships are needed whereby experts in effective publishing cooperate with intermediaries who work with at-risk groups to adequately approach people at risk. A single-shot strategy is inadvisable. A broad, multichannel communication strategy stretching across different use settings and over a period of time is likely to be more effective.

To ensure the game-based PESI initiative is not abandoned, additional requirements have to be taken into account. A sustainable approach requires that the quality of the game-based platform and related services are assured and that updates can be made initialized when user needs change. Integrating the game as a tool, together with technical, pedagogic and/or agogic support, to make existing intermediary services more effective, will also contribute to the longevity of the initiative. Finally, assessment tools (built-in and external to the game) need to be available so that stakeholders can be informed of usability and playability of the digital game as well as short- and long-term impact on learning, empowerment and social inclusion.

Clearly these requirements cannot be met without a sound financial plan that takes into account all aspects of setting up and carrying out game-based projects including research, creation, marketing, implementation and follow-up. Public-private partnerships can be set up to secure mixed funding so that high-quality and sustainable projects can be delivered. However, it is difficult to justify funding for game-based approaches in the absence of evidence of what works and how. For evidence on the meaning and influence of game-based PESI projects to grow, multi-level impact assessment will need to become standard. Assessment tools, research support and platforms for sharing project experiences can facilitate this process.

5. Final Reflection: Knowledge Transfer and Service Scaling

Having defined requirements that are likely to contribute to the effectiveness of game-based PESI projects, the question arises how successful projects can be scaled up and transfer knowledge to other initiatives. To conclude, we briefly summarize the opportunities discussed in Stewart et al (2013: 117-120): (1) institutional actors can demonstrate their work, (2) developers and publishers can distribute packaged games including training material in multiple language versions, re-customize games and practices and foster a community of players and game-makers, (3) intermediary organisations can share good practice and build up local expertise and finally, (4) individuals can provide training.

References

Atkinson, A.B. (1998) "Social Exclusion, Poverty and Unemployment", in Atkinson, A.B. and Hills, J. (Eds.), *Exclusion, Employment and Opportunity*, CASE paper 4, London School of Economics, London, pp 1–20.

At-risk (2008) *Kognito Interactive*, [Browser game], http://www.kognito.com/products/faculty.

Bleumers, L., All, A., Mariën, I., Schurmans, D., Van Looy, J., Jacobs, A., and Willaert, K., De Grove, F. and Stewart J. (Ed.) (2012) *State of Play of Digital Games for Empowerment and Inclusion: A Review of the Literature and Empirical Cases*, JCR Technical report No. 25652 EN, Publications Office of the European Union, Luxembourg.

CivWorld (2011) Firaxis, [Social network game], http://www.facebook.com/civworld.

Gamestar Mechanic (2010) E-line Media, [Browser game], http://www.gamestarmechanic.com.

JRC-IPTS (2007) "Online Foresight Guide to Expert Panels", [online], JRC-IPTS, Sevilla, http://forlearn.jrc.ec.europa.eu/guide/4_methodology/meth_expert-panel.htm.

InLiving (2008) *Grassroots Learning*, [Mobile game], http://inliving.aniac.co.uk.

Ito, M. and Bittanti, M. (2010) "Gaming", *Hanging Out, Messing Around, Geeking Out: Kids Living and Learning with New Media*, MIT Press, Cambridge, MA, USA, pp 195–242.

Jenkins, H. (2009) *Confronting the challenges of participatory culture*, John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning, MIT Press, Boston, MA, USA.

Karabanow, J. and Naylor, T.D. (2010) "'Being hooked up': Exploring the experiences of street youth and information technologies", *The International Journal of the Humanities*, Vol 5, No. 3, pp 253–260.

Khaled, R. (2011) "Equality = Inequality: Probing Equality-Centric Design and Development Methodologies", in Campos, P., Graham, N., Jorge, J., Nunes, N., Palanque, P. and Winckler, M. (Eds.), *Human-Computer Interaction – INTERACT 2011*, Lecture Notes in Computer Science, Springer Berlin Heidelberg, pp 405–421.

Choices and Voices (2009) *PlayGen*, [Browser game], http://playgen.com/choicesandvoices/.

Lord, J. and Hutchison, P. (1993) "The process of empowerment: Implications for theory and practice", *Canadian Journal of Community Mental Health*, Vol 12, No. 1, pp 5–21.

Notley, T. and Foth, M. (2008) "Extending Australia's digital divide policy: an examination of the value of social inclusion and social capital policy frameworks'", *Australian Social Policy*, Vol 7, pp 87–110.

Ortiz, J.A. (2009) "Re-gaming the digital divide: Broadband, MMOGS and US Latinos", *iConference 2010 Proceedings*, University of Illinois, Urbana-Champaign, IL, USA, 7p.

Phipps, L. (2000) "New communication technologies - A conduit for social inclusion", *Information, Communication & Society*, Vol 3, No. 1, pp 39–68.

Poverty Is Not a Game (2010) Grin Multimedia, [PC Game and Browser game], http://www.povertyisnotagame.com.

Royle, K. and Colfer, S. (2010) *The breadth and scope of computer games in learning: Applications to 14 to 19 learners with a specific focus on applicability to those who are classified as Not in Employment, Education or Training (NEET)* (Research report), Centre for Developmental and Applied Research in Education (CeDARE) & BECTA.

Sawyer B. and Smith P. (2008) "Serious Games Taxonomy", Presentation at Serious Games Summit GDC, San Francisco, CA, February, http://www.dmill.com/presentations/serious-games-taxonomy-2008.pdf.

Scapola F. and Miles I. (2006) Eliciting Experts' knowledge: A comparison of two methods. Technological Forecasting and Social Change, 73, pp 679-704.

Schouten, B. (2011) *The Role of Play*, Inaugural lecture, Eindhoven University of Technology.

Selwyn, N. (2002) *Defining the "Digital Divide": Developing a Theoretical Understanding of Inequalities in the Information Age* (Occasional Paper No. 49), Cardiff University, Cardiff.

Squire, K.D. and Barab, S. (2004) "Replaying History: Engaging Urban Underserved Students in Learning World History through Computer Simulation Games", Proceedings of the Sixth International Society of the Learning Sciences, Santa Monica, CA, pp 505–512.

Starbright world (2006) *Schematic, Userplane, & Starlight Children's Foundation*, [Social network site] [Browser game], http://www.starbrightworld.org.

Stewart, J. and Misuraca, G. (2012) *A Roadmap for Action on Digital Games for Empowerment and Inclusion in Europe*, DGEI Project Deliverable, JRC-IPTS, Sevilla.

Stewart, J., Bleumers, L., All, A., Mariën, I., Schurmans, D., Van Looy, J., Jacobs, A., Willaert, K., De Grove, F., Misuraca, G. and Centeno. C (2013) *The Potential of Digital Games for Empowerment and Social Inclusion of Groups at Risk of Social and Economic Exclusion: Evidence and Opportunity for Policy*, JRC Scientific and Policy Reports No. EUR 25900 EN, Publications Office of the European Union, Luxembourg.

Wright, D. and Wadhwa, K. (2010) "Mainstreaming the e-excluded in Europe: strategies, good practices and some ethical issues", *Ethics and Information Technology*, Vol 12, No. 2, pp 139–156.