How to motivate adult learners through e-Learning: Some key insights from research case studies

Conference Paper · October 2013

CITATIONS
2

READS
434

3 authors:

Kevin Lowden
University of Glasgow
64 PUBLICATIONS **477** CITATIONS
SEE PROFILE

Rahela Jurković
Freelance researcher
22 PUBLICATIONS **63** CITATIONS
SEE PROFILE

Peter Mozelius
Mid Sweden University
250 PUBLICATIONS **1,839** CITATIONS
SEE PROFILE

How to Motivate Adult Learners Through e-Learning: Some key Insights From Research Case Studies

Kevin Lowden[1], Rahela Jurković[2] and Peter Mozelius[3]
[1]School of Education, University of Glasgow, Glasgow, UK
[2]WYG Consulting, Zagreb, Croatia
[3]Department of Computer and Systems Sciences, Stockholm University, Stockholm, Sweden
Kevin.Lowden@glasgow.ac.uk
rahela.jurkovic@wyg-c.eu
mozelius@dsv.su.se

Abstract: In 2011, the Council of the European Union set out five priorities for adult learning over the period 2012-14. Within this context, our paper draws on the findings of a number of research case studies to investigate whether technology and e-learning can improve the quality of adult education and, in particular, whether they can engage learners and promote motivation to learn. The aim of the article is to reflect on approaches used in the case studies to explore and discuss how selected models of learning and motivation for adult learners might be supported and enhanced by contemporary ICT and technology enhanced learning (TEL). The main research approach used to provide evidence for the article is a case study strategy with three case studies across two sites or units; the Stockholm unit and the Glasgow/Zagreb unit. The Stockholm unit comprises of a description and analysis of a web-based course for multimedia programming with participants across various age groups and a considerable geographical spread. The Glasgow/Zagreb unit is based on emerging results from the ongoing Grundtvig Learning Project (*ITELEAD*) that, among other partners, includes the University of Glasgow /Scotland and an adult learner provider WYGS / Croatia. Our emerging findings indicate that ICT/ TEL can be used to support learning in adult education when approached from a collaborative and social constructivist approach. We also posit that while ICT/ TEL can play a role in facilitating learning and promoting motivation to learn other factors, which are common to promoting learner engagement in general, must also be addressed.

Keywords: motivation in adult education, lifelong learning, technology enhanced learning, e-learning, game-based learning, blended learning

1. Introduction and context

Finding innovative models for successful lifelong learning is an important issue to address.
The recent economic crisis, the constant need for new skills and the demographic changes facing Europe have highlighted the key role of adult learning in lifelong learning strategies and have helped to provide an impetus for measures that increase adult participation in learning and so improve economic competitiveness, employability but also social inclusion and active citizenship.

The European Commission highlights the key challenges facing adult learning:

> *The potential of adult learning has not been yet fully exploited: participation in lifelong learning varies greatly and is unsatisfactory in many EU countries and well below the EU target for average participation in lifelong learning (15% by 2020 for adults aged 25-64). In 2011, average participation was 8.9%... only six EU countries had reached or exceeded the target participation rate. Participation also decreases substantially in the case of low-skilled and older adults.*
>
> *(http://ec.europa.eu/education/lifelong-learning-policy/adult_en.htm)*

These concerns are reflected in the European Agenda for Adult Learning's five priorities for adult learning in Europe for 2012-14 (Council of the European Union 2011 pp5-6) and range from promoting lifelong learning to promoting equity, social cohesion and active citizenship. For their fulfilment, the three core priorities of the European Agenda require the involvement of motivated learners.

A key issue underpinning these priorities is how do we design learning and motivate adults to participate in learning? This is particularly relevant for those groups that traditionally have proved difficult to engage in learning. As Steel (2006: 789) highlights, there is an extensive literature on what motivates learners and adults to participate in learning. These cover intrinsic and extrinsic motivation (Ryan & Deci, 2000), sociocognitive constructs, such as expectancy-value theory (e.g. Wigfield & Eccles, 2000) and self-efficacy (e.g. Zimmerman,

2000) and achievement goal theories (e.g. Ames, 1992; Dweck & Leggett, 1988; Meece, 1991). This paper is not the place to debate the range of learning motivation concepts and theories. However, our related case studies draw on promising theories in this field including ARCS (Keller and Suzaki 1988) and a social constructivist theoretical framework pertinent to education (e.g. Nystrand, 1996,Corden, 2001, Matsumara, Slater & Crosson, 2008)

Technology enhanced learning

Technology-enhanced learning (TEL), formerly entitled e-Learning, has the goal to provide socio-technical innovations that promote learning and associated practices that are address challenges of time, place and pace. Building on descriptions of e-learning provided by HEFCE (2005 and 2009), the JISC (2010) definition of Technology Enhanced Learning is given as the *provision of a reliable technology environment which provides learning opportunities wherever the learner chooses*.

The need to equip European citizens with new skills is recognized in all the most recent EC documents as well as the importance of ICT in acquiring these skills (Europe 2020 Strategy, New Skills for New Jobs communication, Innovative Europe strategy). There is, therefore, great interest in exploring the potential of ICT and TEL as a facilitator for innovation and change in European lifelong learning and as a way to increase the digital and key transversal skills of European citizens.

There are many challenges facing this area of research and practice, especially in translating concepts into practice. While much research has focused on higher education and schools, it has indicated that the types of pedagogy used in many education settings have remained unchanged when innovative technologies have been introduced (eg Gilly 2005). For many in society, particularly young people, technology is an everyday part of their lives, facilitating access to information, communicating with others and, potentially empowering them. In contrast, technology, particularly in adult education has yet to reach its potential in learning contexts (JISC 2004). The potential is great, however, for TEL to address inequalities in adult education through promoting adults' access to learning via appropriate technologies. Our project case studies seek to address this issue.

Game-based learning

Playing games as a pedagogical idea was introduced theoretically at university level in the 1970s by Jean Piaget (1973) and Lev Vygotsky (1978) but studies on play and games started earlier in 1938 when the Dutch historian and cultural theorist Johan Huizinga published his ideas on man as a playing being. In the book *Homo Ludens* Huizinga presents play as an essential and important activity in human culture (Huizinga, 1938). Even if the main ideas in Huizinga's book are on human playing rather than on gaming (Rodriguez, 2006) the book has influenced modern game research in articles on various topics from online multiplayer games like World of Warcraft (Golub, 2010) to traditional offline games like Football (Zivanovic et al., 2010)

However, play and logic are two different phenomena and there must be a distinction between playing and gaming (Rodriguez, 2006)**.** Games are unlike free play and are defined by rules and with abstract challenges that result in quantifiable outcomes (Kapp, 2012). In a broad sense educational games might be defined as the set of games that are designed to teach someone something and that almost any initiative that combines games with education can be considered as *Game based learning (GBL)*. (Moreno-Ger et al., 2008). In computer science and programming education GBL can be divided into two categories where the first one is a pedagogical idea based on students learning to program by playing educational games. The second category that is discussed in this article is an approach where students learn to program by constructing their own computer games.

2. Aims and methodology

Our research aims were to look at a range of evidenced examples of where adult learning was using innovative ICT and TEL and explore how these might be promoting adults' learning and motivation to learn. In addition, we then wanted to apply a specific motivational theory (ARCS) and a social constructivist theoretical framework to better understand the processes involved in these examples and to posit suggestions regarding the use of ICT and TEL in adult education. It is important to note that we were not attempting to provide a guide on 'how to use ICT in adult education' per se but rather we hoped to draw on selected examples of ICT/

TEL in adult education to look at certain motivational theories to illuminate issues and strategies that can inform this topic area.

The key research questions derived from these aims were:

- what can a selection of examples of ICT/ TEL use in adult education across a number of countries and in different contexts tell us about the how these technologies can enhance learning and motivation to learn?
- are there common issues and factors influencing the use of ICT/ TEL approaches across these various contexts?
- are the ARCS motivational theory and a social constructivist theoretical framework useful in understanding how ICT and TEL might facilitate adults' learning and willingness to learn?
- do the selected examples and emerging findings provide lessons for those concerned with adult education practice and policy?

Research methods

The overall research approach used was a case study strategy where a case study is defined as an empirical inquiry exploring real world contemporary phenomena (Yin, 1989). Case studies are typically conducted with researchers investigating and/ or evaluating a process, programme or activities in depth using various appropriate methods for data collection (Creswell, 2009). This is done in a research design where taking different sources of evidence together and taking account of context will provide a deeper understanding of the investigated phenomenon (Remenyi, 2012). Our case studies of innovative ICT and TEL entailed a range of methods to gather the required data and information which included: a limited literature review/ web search of education practice in our respective countries that has used ICT/ TEL; email enquiry and telephone interviews with practitioners as well as key education representatives to explore issues in more detail and highlight contextual issues and characteristics of innovative and 'good practice' regarding using ICT and TEL in education; collating and analysing secondary data and documentary evidence across the case studies, including analysis of students' postings in on-line forums in the virtual learning environment and course statistics retrieved from the DSV's (Swedish case study) internal course management system. It should be noted that at the time of writing this paper the Scottish/Croatia case study was still underway and the relevant findings reported here draw on emerging examples and themes.

3. The case studies

The three case studies and their respective examples of ICT/ TEL identified and researched, while distinct in terms of their contexts, can be seen as offering valuable insights on whether the deployed ICT/ TEL enhanced the education experience of the adult learners and improved their motivation to learn. Also, the case studies provided sufficiently detailed data to explore whether any factors promoting learning and motivation were likely to be transferable.

Glasgow/Zagreb unit:

This consisted of two case studies. In Zagreb, we analysed a successfully evaluated model of raising the employability capacities of unemployed persons with disabilities, run by the Croatian institution URIHO, Institution for Vocational Rehabilitation and Employment of Persons with Disabilities. In Glasgow, an innovative Virtual Learning Environment (VLE) called MOLE was studied.

The URIHO Virtual Workshop

The URIHO Virtual Workshop is a training firm and also a model that aims to improve work and social skills and the abilities of unemployed persons with disabilities. The model consists of improving, through training, participants' knowledge, competences and skills in the area of finance, commerce and administration, and of offering them working experience. Importantly, the Virtual Workshop uses ICT/ TEL in providing simulations of real-work situations in distribution and sales of fictional products and services, financial and administrative management, marketing and PR activities. In addition, the participants are involved in active learning group learning and teamwork that includes a focus on problem solving and fostering their communication skills. The

Virtual Workshop technology and programmes with kept up-to-date IT systems are networked with other similar training firms to enhance knowledge exchange and market intelligence.

MOLE (Moodle Offender Learning Environment)

As part of a Grundtvig Learning Project, the Glasgow University partner has been involved in scoping innovative examples of ICT/ TEL for adults as well as looking at how proven TEL approaches and pedagogies for young people and professionals can be appropriated for vulnerable adult groups. One example the team identified was MOLE, a virtual learning environment (VLE) delivered via the Moodle platform. Unlike most VLEs, it is an offline resource maintained by Motherwell College in Scotland, to be used in prisons by offenders and staff. The College provides an offender learning and skills service in seven of 14 public sector prisons. The Scottish Government (2011a) recognised the disproportionate number of young adults (16 to 25 years old) entering the justice system and becoming detained within the prison service. The review identified a need for prisoners to remain in education, to continue their learning and acquire new skills. Research by Cooper (2008) and Craig (2003) highlighted that this group of adults and indeed other adults in Scotland, face particular barriers to adult education because of a 'mindset' that means they fear failure and are worried about 'getting it wrong', particularly when learning in front of their peers. In the MOLE programme, each prison learning centre focused on the skills needed by individuals to enter the community following a custodial sentence, and move into a positive destination e.g. education, training or employment.

The technology aspect in MOLE comprised of a VLE based on Poodle (Portable Moodle) configured to operate offline (a requirement demanded by the prison service) on a local area network (LAN). Working with prison staff, the college populated the courses with content by writing and supplying learning and teaching resources, assessments and SCORM packages (a collection of standards and specifications for web-based e-learning). Through this, individual courses and facilities were offered via e-learning/ interactive material covering a wide range of primarily vocational courses such as business and administration; computing (basic to intermediate); English competency; mathematics (basic/ life skills to university entrance level); hospitality and advanced study including university entrance level and Degrees.

The VLE also provided information on other further and higher education courses, so that offenders can consider progression at a later stage. MOLE was designed with the learner in mind, with accessibility considerations meaning that it caters for those with additional support needs. Likewise, prison staff can also use MOLE to share information or to engage in their own training and professional development.

Stockholm unit:

The analysis and discussion in this unit has been based on a summer course on programming at the Department of computer and systems sciences (DSV) at the Stockholm University. DSV has a tradition of building computer games in programming courses, and after the establishment of a Computer Game Development programme in 2005 games are finally seen as more constructive than distractive. But in the introductory programming there is not much game based learning and programming techniques have been taught with traditional exercises and assignments.

IB910C / Multimedia programming in Python

The Stockholm case study is the IB910C / Multimedia programming in Python course. A summer course in Sweden is seldom part of a programme curriculum and can for that reason be designed more freely and experimentally. IB910C / Multimedia programming in Python is a course where game construction with multimedia techniques is the main setup for students to learn important basic imperative programming techniques in the Python programming language. IB910C is developed to be a distance course given in the Moodle environment with streaming lectures and recorded tutorials providing information for the students' independent work with four assignments and a project. But experience and feedback from earlier course batches revealed that an introduction lecture given face-to-face and open computer halls for students working together with assignments improves the outcome.

The course is provided during 10 weeks from June to August with a workload corresponding to 5 weeks or 7.5 ECTS. Students come from all over Sweden and from various age groups. In the summer of 2013 the youngest

student was 20 years and the oldest 67. There are also large variations in the student's pre-knowledge where some students only have the required earlier basic programming experience and others are close to completing civil engineering IT-programmes.

Almost everything in the course is based on games and how to build games in the Python programming language. Two course books, one mandatory, have all their chapters based on code examples for runnable computer games. The mandatory book Python Programming for the Absolute Beginner (Dawson, 2010) introduces basic programming concepts like variables, selection, iteration, Boolean condition and data structures by constructing classical computer games like Hangman and Tic Tac Toe. The programming techniques are also explained in traditional lectures and recorded and provided in a streaming online format in the Moodle environment. Four assignments that all students have to solve are also designed to have a game or a multimedia component as the solutions that should be submitted in a Moodle assignment drop box. In these assignments students learn to use multimedia and programming techniques that later can be reused and extended in the final course project. The design idea for the project game is discussed online in a forum before the implementation starts. At the end of the course participants test and give feedback on each other's beta-versions of the games before the final submissions.

4. Findings and discussion

Glasgow/Zagreb unit:

In Zagreb, the URIHO Virtual Workshop demonstrated a good example of an efficient integration of people with disabilities into the labour market and a simulated working environment that was enhanced by various ICT. The Workshop also involved evaluation of the participants' outcomes following their training. Out of all participants who have been evaluated as employable at the end of the Workshop, 62% found an employment within three months after the completion of the training.

The research found that adults' motivation to attend the training stemmed from the fact that the training was perceived as likely to be useful to them, mainly in vocational and employability terms, but also in terms of promoting their wider life skills. An important feature for adults was also that the individual approach each educational model takes ensured that the courses and training were tailored to each learner's needs, capabilities and skills. Monitoring the learner's progress and evaluating their outcomes helped to guide adults, permit tutors to intervene when necessary and assess how well the URIHO had addressed adults' needs. Taken together, this holistic and needs-based approach resulted in motivated learners who typically achieved the ultimate goal of their education; finding employment.

Initial findings from the Scottish MOLE initiative indicate that there were a number of positive outcomes directly related to the use of the programme (JISC, 2013) including promoting offenders' motivation to engage with learning as well as providing opportunities for meaningful progression to further and higher education opportunities. In particular there has been an increase in access and inclusion for all prisoners to the online curriculum and increased retention within learning via the use of technology. The learning content and delivery is more closely aligned with the further and higher education sector and is providing greater progression to these sectors. Offenders are using MOLE to learn at their own pace using technology whilst enhancing their own digital literacy skills. They are learning how to learn and improving their confidence to take up other learning opportunities.

In Scotland, the Mole initiative has revealed a number of challenges in attempting to introduce TEL into this particular context. The course designers state that working in a secure environment was problematic. This included 'issues with access to servers to the use of USB drives in prisons'. This was addressed by the team working closely with SPS officers and the learning centre staff to ensure digital media and systems complied with the prison services' protocols and regulations and working within the SPIN (Scottish Prisons Internal Network) and linking with the College's Moodle system. This has led to discussions on the creation and use of a secure USB drive to allow staff to create materials outside of the learning centres and then transfer these materials and courses to MOLE without the use of CDs/DVDs.

Stockholm unit:

The basic course concept built on the idea of learning to program by game construction appears to work for all age groups but there are variations in the type of games that are built. Older students often make educational games for their children with basic multimedia effects but with pedagogical ideas and user-friendly interfaces. There is also the *'Commodore 64 generation'* that builds replicas of the games that they played in their youth with graphics and navigation imitating a Commodore 64 interface. Sprite based *'Shoot them up games'* tend to be a project that males mainly choose. The course evaluation responses indicated that many students appreciated the current format and pedagogy, where students are relatively free in their choice of game design. However, some students struggled when there were no clear guidelines provided and, here some standard game ideas had to be given.

The pass rate for the course was the highest ever for online courses, including summer courses on programming given by DSV. With minor variations the pass rate has been about 65% during the last years and one year, with a rainy summer, more than 70% completed the course. How difficult the students find the course was dependent on participants' earlier programming experience and one explanation for the high pass rate could be that some students had a more pre-knowledge than what was required to join the course. One reason for the course being popular and having a high pass rate is the attractive concept of game-based learning for these adults but another explanation might be that there are relatively few programming courses in Sweden where Python is the programming language.

5. Conclusions

To explore our research aims and questions we synthesise our key findings and apply our conceptual lens. While the case studies presented here are quite different in their focus and target groups of learners, they present insights regarding how we design and use technology to enhance learning approaches and promote access and success in learning.

The Stockholm case study has shown that the concept of learning to program by analysing and building digital games works and can be particularly successful. In heterogeneous student groups it appears that it is worth developing courses that are less formal and that encourage an exploring and more creative learning style. Courses where computer games are involved seem to engage younger adults; however, the challenge is not to get participants to enrol but rather to support them to complete the course. Here, ICT/ TEL approaches need to be augmented with face-to-face learning sessions.

The Zagreb and Glasgow case studies indicate that learners' initial mindset and dispositions and levels of confidence are factors influencing motivation to learn and that ICT/ TEL approaches can address these to facilitate positive outcomes. In the URIHO Virtual Workshop case study learners were often motivated by the potential of improvement to their employment prospects and TEL was then used in simulation of workplace activities to optimise their preparation for employment and develop their employability skills and attributes. In the case of the MOLE, the learners' initial mindset acted as a barrier to learn was strongly influenced by a lack of confidence and a fear of failure in front of peers. Here TEL in the form of a VLE enabled educators to offer a range of educational content to young adult offenders who could learn at their own pace and individually. This removed their fear of initial failure in front of peers that a 'traditional' learning classroom context might have presented.

Looking at the our findings from a social constructivist theoretical framework we can argue that effective learning for adults, and arguably in general, occurs when learners are given opportunities to engage in shaping their own learning through practical experience as part of the learning process and the Learning and development is a social, collaborative activity. In the case studies the educators, used ITC/ TEL to create or enhance a context for learning in which learners could become engaged in interesting activities that encouraged and facilitated learning. Across the cases studies, providers sought to engage the adults using a range of ITC/ TEL approaches tailored to the requirements of the learners and augmented with collaborative face-to-face sessions including practical activities. In the case of the more vulnerable groups this was often grounded in an interdisciplinary context that helped to promote their broader life skills. We would argue that these examples indicate that ICT/ TEL facilitated the transmission of concepts and interactivity that leads to the social construction of meaning and learning. The active learning approach and dialogue facilitated by

technology promoted learners motivation to learn and confidence to engage the education opportunities. This is in line with constructivist studies (e.g. Barab, Dodge, Thomas, Jackson, & Tuzun, 2007; Weber, Maher, Powell & Lee, 2008)

Our case study findings also suggest that the principles of the ARCS motivation model are useful in understanding why adults were motivated to learn and sustained their participation. The approaches, particularly that used in the Stockholm case study secured learners' *attention* via inquiry arousal and creating an investigative approach. All case studies provided *relevant* course material, related to wider situated knowledge and promoted *confidence* via ICT/ TEL, iterative feedback and different learning experiences that reinforced one another.

Given the varied nature of the learning programmes in the case studies we can ask are there any common themes or issues regarding using ITC/ TEL in adult education, particularly to motivate and engage learners who are often distinctly different in their circumstances and needs? Firstly, one of the emerging findings is that although the programmes and their learners and contexts are quite different, ICT/ TEL approaches have enabled learners to access learning resources in a way that suits their own time and circumstances (e.g. the Moodle courses in the Swedish and Scottish cases). In the case of the offenders, this approach and the ability to learn individually helped to promote their self-confidence to participate. As they achieved their motivation to engage in further learning, even involving higher and further education destinations increased.

Another, and perhaps one of the most striking themes across the case studies, is that the various ICT/ TEL resources and learning strategies have also had to be supported by face-to-face sessions that can involve group work to reinforce their learning and facilitate social skills. For example, in the Swedish case study, experience and feedback revealed that an introduction lecture given face-to-face and open computer halls for students working together in groups with their assignments improved their learning outcomes. Indeed, online courses without any blended learning components were seen by adults as a potentially cold, lonely and too virtual an environment. Discussion fora, virtual seminars and online facilitation can therefore, be valuable when learners get stuck in course activities. In the Croatian case study, the individual's learning via the ICT platforms and programmes was augmented with face-to-face guidance and active learning group learning and teamwork to fostering their problem solving and communication skills. However, there are caveats to this. In the case of the Scottish case study, the adult learners were prisoners with often severe self-confidence issues and performance avoidance. Therefore, face-to-face and group work was, at least initially, less necessary, until a level of confidence had been established.

For vulnerable groups in the Scottish and Croatian case studies the focus of their adult learning was often on promoting access to sustainable, independent living including accessing the labour market. Here ICT/TEL was able to enhance their learning and outcomes in two important ways. Firstly it provided platforms that allowed access to relevant learning content required to improve their skills and acquire qualifications recognised by employers and education providers. In these two examples, the ICT/TEL also facilitated adults' ability to learn how to learn, using technology whilst enhancing their own digital literacy skills. Secondly, it allowed effective assessment and monitoring that informed guidance and mentoring.

Our case studies suggest that adult educators should look at their pedagogies to ensure that they take advantage of ICT / TEL approaches to maximise their potential to reach different groups of adult learners and facilitate their learning, their skills, motivation and confidence to pursue further learning and achieve their aspirations. However, it is crucial to note that while ICT / TEL can play a role in facilitating learning and promoting motivation to learn, other factors that many an adult educator will be familiar with are also extremely important. We suggest that ICT/ TEL approaches are not a solution alone, rather they need to be considered as part of a holistic learning and teaching package that is co-constructed with adult learners and other relevant stakeholders to reflect their needs, develop appropriate pedagogies and assessment procedures. As Professor Richard Noss, TEL Director, London Knowledge Lab states.

> *Technology of itself doesn't enhance learning. It depends how the technology is designed and implemented; how educators are supported to use it; how outcomes are measured; what communities are in place to support it (http://tel.ioe.ac.uk/about-3/).*

References

Barab, S., Dodge, T. Thomas, M.K., Jackson, C. & Tuzun, H. (2007). Our designs and the social agendas they carry. Journal of the Learning Sciences, 16(2), 263-305.

Craig, C. (2003) *The Scots Crisis of Confidence*, Centre for Confidence and Wellbeing: Glasgow

Creswell, J. W. (2009) *Research Design, Qualitative, Quantitative and Mixed Methods Approaches*, Sage Publications Inc

Corden, R.E. (2001). Group discussion and the importance of a shared perspective: Learning from collaborative research. Qualitative Research, 1(3), 347-367.

Cooper, K. (2008) *Engaging young offenders in employment, training and education*, unpublished PhD.

The Council of European Union (2011) (Resolutions, recommendations and opinions) Council Resolution on a renewed European agenda for adult learning. 2011/C 372/01. *Official Journal of the European Union* (resolutions, recommendations and opinions). http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:372:0001:0006:EN:PDF

Dweck. C. (2006) *Mindset: The new psychology of success*, Random House: New York

Dawson, M. (2010) *Python Programming for the Absolute Beginner*, Course Technology, CENGAGE Learning, ISBN10: 1435455002

Gilly (2005) Flying not flapping: a strategic framework for e-learning and pedagogical innovation in higher education institutions, *ALT-J*, 13: 3, 201 — 218

Golub, A. (2010) "Being in the World (of Warcraft): Raiding, Realism, and Knowledge Production in a Massively Multiplayer Online Game", *Anthropological Quarterly*, Vol. 83, No. 1

Jisc. (2013) Mole (Moodle offender learning environment): *The technical issues in creating a VLE for Motherwell College Prison Learning Centres*, online. http://www.rsc-scotland.org/?p=2599

HEFCE (2005) *HEFCE e-learning Strategy*, March 2005, HEFCE 2005/12. p.5

HEFCE (2009) *Enhancing learning and teaching through the use of technology. A revised approach to HEFCE's strategy for e-learning*. Accessed from www.hefce.ac.uk/pubs/hefce/2009/09_12/

Huizinga, J. (1955, originally published in 1938) *"Homo Ludens: A Study of the Play Element in Culture"* Beacon Press, Boston

JISC (2010), JISC Strategy 2010 - 2012. www.jisc.ac.uk/aboutus/strategy/strategy1012/executivesummary.aspx

Keller, J. M., & Suzaki, K. (1988). Use of the ARCS Motivation Model in Courseware Design. In D. H. Jonassen (Ed.), *Instructional Designs for Microcomputer Courseware*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Kapp, K. (2012) *"The Gamification of Learning and Instruction: Game-Based Methods and Strategies for Training and Education"* San Francisco: Pfeiffer, ISBN: 978-1-118-09634-5

Moreno-Ger, P., Burgos, D., Martínez-Ortiz, I., Sierra, J.L. & Fernández-Manjón, B. (2008*) "Educational game design for online education", Computers in Human Behavior*, p. 2530–2540

Motherwell College. (2013) Offender Learning, online. http://www.motherwell.ac.uk/about-us/offender-learning-introduction (last accessed 04/06/2013).

Majsec Sobota, V, Matoš I, Bašić I, Sobota I. (2012) *URIHo-vi modeli radnog centra i virtualne radionice za nezaposlene osobe s invaliditetom te iskustva u radu s poslodavcima*, Osvit, Zagreb, ISBN 978-953-95900-5-3

Nystrand, M. (1996). *Opening dialogue: Understanding the dynamics of language and learning in the English classroom*. New York: Teachers College Press.

Piaget, J. (1973) *"To understand is to invent"*, New York: Grossman (Original work published 1948)

Remenyi, D. (2012) Case Study Research, Academic Publishing International Limited, Reading, United Kingdom

Rodriguez, H. (2006) *"The Playful and the Serious: An approximation to Huizinga's Homo Ludens"* Game Studies, the international journal of computer game research, volume 6 issue 1, December 2006

The Scottish Government. (2011a) *Skills for Scotland: Offender learning - options for improvement,* online, http://scotland.gov.uk/Resource/Doc/297489/0092539.pdf.

Steel, P.; Konig, C. J. (2006). Integrating Theories of Motivation. *Academy of Management Review*. Vol 31 (4): 889–913.

Vygotsky, L.S. (1978) *"Mind in society: The development of higher psychological processes."* Cambridge, Harvard University Press

Weber, K., Maher, C., Powell, A., & Lee, H.S. (2008). Learning opportunities from group discussions: Warrants become the objects of debate. *Educational Studies in Mathematics*, 68 (3), 247-261.

Yin, R. K. (1989 - 2008) *Case study research: Design and Methods*, Sage, Thousand Oaks

Zivanovic, N., Randjelovic, N., Stancovic, V. & Pirsl, D. (2010) *"More than a Game",* Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH, Issue 2