

Middlesex University Research Repository

An open access repository of

Middlesex University research

<http://eprints.mdx.ac.uk>

Siakas, Kerstin V., Rahanu, Harjinder, Georgiadou, Elli and Paltalidis, Nickos (2019) Education and social development current pedagogical trends. In: 4th International Conference on Education Science and Development, 19-20 Jan 2019, Shenzhen, China.

Published version (with publisher's formatting)

This version is available at: <http://eprints.mdx.ac.uk/26232/>

Copyright:

Middlesex University Research Repository makes the University's research available electronically.

Copyright and moral rights to this work are retained by the author and/or other copyright owners unless otherwise stated. The work is supplied on the understanding that any use for commercial gain is strictly forbidden. A copy may be downloaded for personal, non-commercial, research or study without prior permission and without charge.

Works, including theses and research projects, may not be reproduced in any format or medium, or extensive quotations taken from them, or their content changed in any way, without first obtaining permission in writing from the copyright holder(s). They may not be sold or exploited commercially in any format or medium without the prior written permission of the copyright holder(s).

Full bibliographic details must be given when referring to, or quoting from full items including the author's name, the title of the work, publication details where relevant (place, publisher, date), pagination, and for theses or dissertations the awarding institution, the degree type awarded, and the date of the award.

If you believe that any material held in the repository infringes copyright law, please contact the Repository Team at Middlesex University via the following email address:

eprints@mdx.ac.uk

The item will be removed from the repository while any claim is being investigated.

See also repository copyright: re-use policy: <http://eprints.mdx.ac.uk/policies.html#copy>

Education and Social Development Current Pedagogical Trends

Kerstin SIAKAS¹, Harjinder RAHANU², Elli GEORGIADOU²
and Nickos PALTALIDIS³

¹Department of Informatics, ATEI of Thessaloniki, Thessaloniki, Greece

²School of Science and Technology, Middlesex University, London, UK

³School of Electronic Engineering and Computer Science, Queen Mary University, London, UK

Keywords: Education, Social Development, Pedagogical Trends

Abstract. The aim of this study is to investigate the role of education on social development in order to understand the dynamic relationship between these two concepts. Current pedagogical trends and their impact on learning and development are analyzed. Primary emphasis was placed on raising social responsibility on the part of educators and institutions to raise awareness of the socio-economic and ethical inequalities issues in the new generations of students. Indications of future work conclude the paper.

1. Introduction

1.1 Relationship Between Education and Social Development

Social development and improvement are based on socio-economic decisions by politicians to improve the welfare of the society and of individuals. The relationship between education and social development is important and in general positive by connoting that education leads to enhanced notions of tangible or perceived well-being of people including all forms of political, economic, social, technological, cognitive, emotional and other benefits that directly or indirectly affect people's lives [1]. Education is a process that takes place in society to develop and improve, not only material needs, but also social conditions of individuals and society. Education and learning raise aspirations, set values, and ultimately enrich lives [2]. In particular formal education has been reported to bring development to society [7].

1.2 Education

Human advancement and social, economic and environmental challenges are intertwined. This is particularly evident in today's globalized world which is characterized by fast technological changes and new opportunities. Education can provide learners with a sense of purpose, together with the competencies they need in order to improve their own lives and also to contribute in shaping the lives of others and of society at large. Tomorrow's learners will need to *'develop curiosity, imagination, resilience and self-regulation; they will need to respect and appreciate the ideas, perspectives and values of others; and they will need to cope with failure and rejection, and to move forward in the face of adversity'* [3].

Their motivation will be more than getting a good job and a high income; they will also need to care about the well-being of their friends and families, their communities and the sustainability of the planet. The Organisation for Economic Co-operation and Development (OECD) has launched *"The Future of Education and Skills 2030"* project, which aims to help countries find answers to two questions:

"What knowledge, skills, attitudes and values will today's students need to thrive and shape their world";

"How can instructional systems develop these knowledge, skills, attitudes and values effectively?"

The answers to these questions related to education are fundamental for our future education and social development.

1.3 Social Development

Regarding social development we need to pose the question “whose social development?” For instance, university education can be considered as a system which privileges a minority of the population, serving as a route to elite positions in the country and to emigration [7]. Different perspectives may lead to different conclusions regarding what is desirable in educational policy and what portions of national education budgets and development assistance funds should be allocated to the different levels of the education system.

1.4 Research Approach

Conceptually there are two views on education [7]: on one hand “*that being more educated is inherently better than being less educated both at the individual level and in populations at large*”, and on the other hand that “*education has a value insofar as it can be a means to promote other goals of social development*”. According to the first viewpoint there is a perception that education has an intrinsic value whatever the domain or specific content. The second viewpoint claims that the contribution of education is likely to be inconsistent in different contexts and also dependent on the quality of education and its relevance and its socio-cultural context. Our position combines elements from both viewpoints i.e. it is better to be more educated than less educated both at the individual level and in populations at large; and also, that education is a means to promote other goals of social development and needs to be carefully designed and agreed upon by governments and educational institutions.

Education in most cultures seems to play an extremely important role as an agent to [12]:

- educate and civilize individuals and societies;
- promote respect of the individual within society;
- make lives richer and more prosperous;
- increase individual employability;
- offer prospects for progression;
- enhance earning power;
- bridge the gap in society between the haves and the have-nots;
- acquire competitive skills and therefore competitive advantage.

When education is referred to as a “*human right*”, it is usually suggested to include compulsory and free of charge primary education. Takala [7] asserts that there is a general belief in the impact that education has on development without talking into consideration institutional and structural factors in society that either facilitate or block the potential effects of education

In terms of research design, two levels of data collection should be carried out for validating theoretical suggestions [7], namely i) studies relating educational level to other variables within a population (e.g. income level) and ii) comparisons between countries.

This study is an empirical approach based on the authors’ personal experiences of education and a synopsis of their previous publications related to education, teaching and learning [8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30].

The United Nations Education, Scientific and Cultural Organization (UNESCO) study “Education for All - Global Monitoring Report,” looked at the state of learning among the youth - children between the ages of 15 and 24 - in some 37 countries and released its annual education report in May 2014 [5, 6].

Georgiadou et al. [30] reported that “more children across the world's poorer countries are illiterate than previously believed, according to UNESCO's education report. Poor access to education and poorly trained teachers lay at the root of the trend Roughly 250 million children in the world's poorest nations could not read part or all of a sentence, according to the UNESCO study.”

Most of the children came from Arab states, Sub-Saharan Africa or South and West Asia.

Twenty percent (20%) of people across the world are illiterate, two thirds being women. Although 98% of illiterate people are concentrated in three key areas: South and West Asia, Sub-Saharan Africa, and the Arab States, developed nations are also facing a growing illiteracy problem [see Figure 1].

In the U.S.A. alone over 93 million people have basic or below basic literacy skills. The whole continent of Africa has less than a 60% literacy rate. Furthermore, in roughly one-third of those countries, less than 75 percent of school staff members were qualified to teach [6].

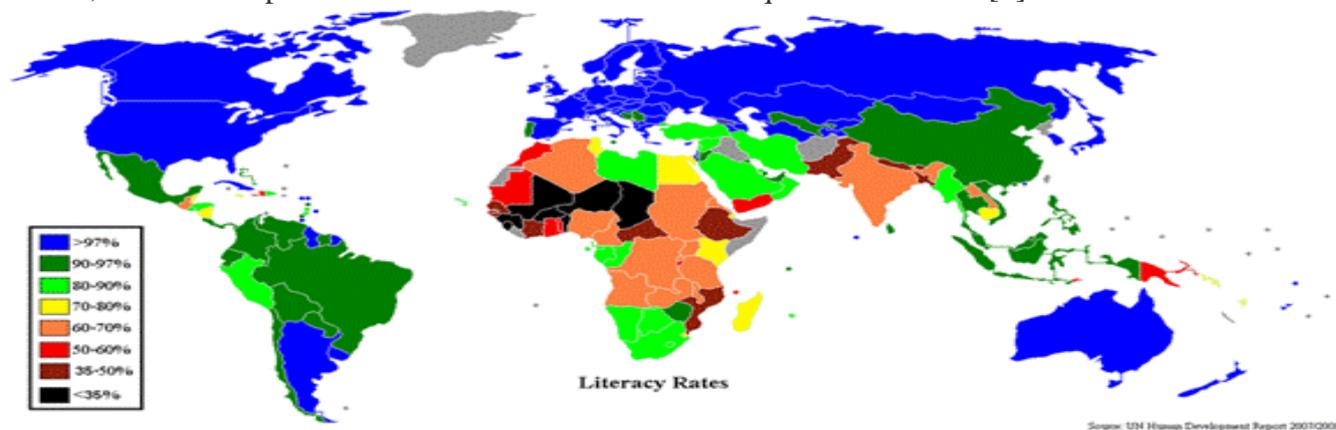


Figure 1. The World Illiteracy Map [www.uis.unesco.org/DataCentre/Pages/upgradebrowser.aspx].

Nowadays the all-pervasive use of computers and the Internet in every facet of our personal lives and businesses has altered our lives at work, at school and at home. It has reshaped the landscape, and the functioning of the economy, industry, agriculture, health, and many other spheres, including education. Today education and learning are undergoing a world-wide change by the participation of instructors, educators, students and industry, and with governments actively involved in its promotion.

The trends today are characterized by decreasing dependence on face-to-face teaching and increasing reliance on Information and Communications Technologies (ICTs). The developments in ICTs, however, demand re-thinking of pedagogic principles and frameworks. The phenomenon of technology based distance mode learning [13] in the form of e-learning, mobile learning (m-learning), social media learning [8, 19, 21], and Massive Online Open Courses (MOOCs – an online course aimed at unlimited participation, self regulated open access via the web) [28, 29] in education has led to a trend towards greater openness, particularly in higher education [2]. A trend in today's learning environments are on creating, fostering, delivering and enabling learning at own place, own pace and own time with increased peer-based learning tasks and promotion of learning within Communities of Practice (COPs) [13, 14]. Another trend focuses on personalized instructional design facilitating individual learners' learning requirements, such as learning style, prior knowledge and learning priorities [15]. Considerable attention has also been lately paid to instructional interventions trying to accommodate learner differences, such as differences in learning styles and state of the learner as well as the surrounding state in which the learning takes place, including educational activity, infrastructure and environment [15]. Recent developments in Web-based implementations have led scholars to reconsider the learning style research in adaptive systems.

There is scientific evidence that social, emotional, and cognitive capabilities are fundamentally intertwined during the learning process. *'An integrated approach to social, emotional, and academic development benefits each and every child and can be part of achieving a more equitable society... Students are most successful when they are given the opportunity to learn in environments that recognize that these skills are mutually reinforcing and are central to learning'* [4].

2. Different Forms of Distance Education

2.1 Global Asynchronous Life-Long Teaching and Learning

Rapidly developing ICTs enable global, asynchronous and life-long learning at increasingly lower and broader educational levels. In parallel to the technological changes, pedagogic approaches and attitudes have been constantly shifting from the didactic model towards more participative, learner-centered models. Human learning and development are strongly affected by social content. Collaborative Learning (CL) is the process of learning which is not gained individually but includes discussion, argumentation and reflection. CL environments lead to a better processing of the information upon a task having an important effect on learning as opposed to individual environments [22]. Improvement of learning can be obtained via communication of the problem among the participants, which can positively affect reflection, problem solving and planning. Achieving student engagement is difficult but it is more important in the case of online technology-based courses than for on-campus courses, due to the fact that students studying online have fewer ways to engage with the institution and probably also greater demands on their time and attention [17].

Pedagogical innovations nowadays incorporate open, distance mode, lifelong, flexible, asynchronous, collaborated, interactive and blended learning. Academic and training provision tends to address industry and societal needs [13]. Assessment methods and instructor training in the use of technologies, production of materials and pedagogic aspects as well as evaluation have become mainstream [14].

Disadvantaged groups such as dispersed communities and people with work and family responsibilities can engage in open, distance mode, asynchronous and flexible studies the acquisition of qualifications, for professional updating, and life-long learning. With recent technological developments, many providers have endeavored to provide technology-based learning with varying degrees of success. The transition from traditional pedagogic environments, technologies and methods to eLearning has followed mostly an ad hoc path. Many enthusiasts pioneered the use of technologies in the preparation and delivery of learning. Gradually more systematic methods and frameworks have been proposed [13].

Western culture and the English language are pervasive. The mental programming of different nations/countries remains different. The understanding of a learner is enriched by his/her cultural background, history and early education. Although technologically we are able to provide customization of applications and materials our attitudes, as developers, educators and learners have remained the same. It is evident that drastic change in this respect is necessary in order to accommodate and cater for cultural diversity.

2.2 Social Media Learning

Rapid advances in ICTs have introduced easy access to services and new electronic learning environments. Social Networking Sites (SNSs) present a new channel for communication and collaboration by individuals, who use SNSs to interact with each other within a common information space, and to participate in diverse interactive and social activities, such as posting content, sharing pictures and videos, tagging and organizing events [24]. The use of social media in education is rapidly expanding. Social media in education has the potential to enable new pedagogic student-centered ways through their bottom-up approach for supporting knowledge activities that harness collective intelligence unlike the hierarchical teacher-centered approaches. The foundations of social media are communication, collaboration and knowledge sharing.

Networked students increasingly use Facebook, Google+, Instagram, Pinterest, Twitter, Skype, Viber, WeChat, and YouTube among other Social Media Tools to communicate, to create content, and to share knowledge. The Net Generation of students have grown up with the technology, computers, video games, and the Internet. Because of this, they share common experiences and a

culture that is defined by certain attributes. This common culture relates to how they interact with ICTs, information itself and other people. New learning experiences need to adapt to the new generation of learners by supporting a more collaborative, social, user-generated content view of the world. Social networking sites are able to increase the engagement of the students in an online learning community as they offer a technology which is well-known among their generation [8]. While initially younger individuals used SNSs, such as Facebook, older people have recently become more involved in using SNSs. Due to the emergent new media it is important to review the whole educational system. It is generally acknowledged that good education requires a two-way connection with students. Our conviction is that there is no better way of communicating with students than in their own 'language' i.e. the social media. Schools and Universities should seek to incorporate social media into their educational programs. This requires careful thought and research in order to find the best way to leverage these new tools to enhance teaching and learning activity. Educators should become innovators in education, to experiment with different technologies and to choose the most appropriate technology to incorporate into their lectures. Social media can be a useful supplement to traditional technology enhanced learning. They can be used to facilitate the learning outcome by encouraging informal learning, supporting reflection and fostering communication as well as collaboration.

Some universities' projects have already gone one step further; they integrate social media and mobile applications in order to replace traditional assessments with electronic assessments. Recent attempts have focused on the development of innovative solutions for the design of class activities as well as for in-class assessment [31]. The aim is to assist communication between educators and students, to create a more interactive learning environment, and in addition to facilitate the assessment process. Students have the opportunity through using their smartphones and tablets, to participate and respond in class activities like multiple-choice tests, matching exercises, etc., while the educators can view, mark, and comment on the students' performance embedded into the their screen with updates taking place in real time.

2.3 MOOCS

Massive Open Online Courses (MOOCs) can be defined as learning events that are conducted via the Web, which can accommodate large numbers of people, typically ranging from a few hundreds of participants to over a hundred thousand [9, 29]. Different types of MOOCS require different levels of participatory literacy skills, motivation and self-determination.

There are two general types: xMOOCs and cMOOCs.

Connectivist MOOCs (cMOOCs) are based on principles drawn from connectivist pedagogy. They are characteristically decentralized, with an emphasis on the production of content as opposed to the consumption. In this approach the participants are encouraged to pursue their own goals and forge their own learning paths, so traditional assessments are rare [29].

The xMOOCs (the x term denotes transfer) are typically centered on instructor-guided lesson(s). A learning management system will accommodate an xMOOC, which characteristically features recorded video lectures and machine-graded assessments. In addition, threaded discussion forums can possibly facilitate student interaction and the potential for peer graded assignments. Succinctly put learning activities in xMOOCs are mainly viewed as being consumptive. Content is prescribed by the developers, and participant mastery or understanding of the content is measured via tests, with almost no direct interaction between an individual participant and the instructor accountable for the course.

3. Conclusion and Further Work

The aim of this study was to investigate the role of education on social development in order to understand the dynamic relationship between these two concepts. Conceptual viewpoints on education were presented.

Current pedagogical trends were analyzed, and particular approaches of global asynchronous life-long teaching and learning and their impact on learning and development were reviewed. Two

contemporary approaches, namely social media learning and MOOCS, were outlined due to the fact that both approaches are increasingly preferred by new generations of learners through their collaborative, social, user-generated content view of the world.

At the same time the ethical dimension of the unacceptable illiteracy levels across the world must not be lost. In 2005, the wealthiest 20% of the world accounted for 76.6% of total private consumption. The poorest fifth just 1.5%! The world Bank Indicators shown in Fig. 2 show that all the discussion about on-line learning is irrelevant for the millions that live on less than 2\$ per day. Also, a quarter of humanity (1.6 billion people) live without electricity. How can they ever benefit from the availability of online courses?

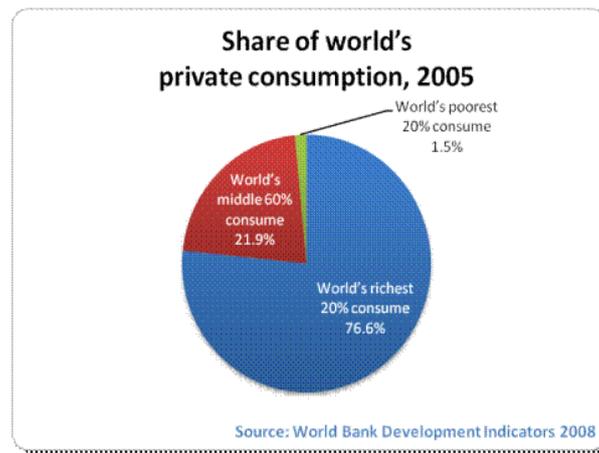


Figure 2. Share of the World's Private Consumption.

Poverty is the primary barrier to access to education. The future is uncertain and cannot be predicted. However, we need to be open and ready to remedy the injustices so that we can plan for the future.

Eubanks [32] asserts that in order to fight for social justice in the Information Age, it is a falsehood to hold the belief that solely technology can pave the road to prosperity. Social and economic equality cannot be bought about solely by universal broadband access, high-tech jobs, and cutting-edge science. This vision can only be understood and thus realised through the context of race, class, and gender. For the disenfranchised, the disadvantaged, working class women and families, the state of things as they actually exist of the information age are more complicated, which need to be understood. Eubanks concludes that for these people, IT can “be both a tool of liberation and a means of oppression”. Thus an approach to creating a more inclusive and empowering technology requires a change of emphasis from teaching technical skill to, amongst other things: nurturing critical technological citizenship; building resources for learning; and fostering social movement.

Further work will carry out comparisons between countries regarding cultural viewpoints on education and social development.

References

- [1] A. A. Abdi and S. Guo, “Education and social development: An Development: Global Issues and Analyses,” pp. 3–12, Sense Publishers, Rotterdam, 2008.
- [2] World Bank Report, “Learning: To realize education’s promise”, doi: 10.1596/978-1-4648-1096-1. 2018.
- [3] OECD. “THE OECD Learning Framework 2030: The future of education and skills”, Better policies for better lives, education2030@oecd.org. 2018.

[4] The Aspen Institute. "How learning happens: supporting students' social, emotional and academic development", an interim report, www.aspensead.org. 2018.

[5] UNESCO (2017). Media and Information Literacy. Available at: <http://www.unesco.org/new/en/communication-and-information/media-development/media-literacy/mil-as-composite-concept/> (10/09/18)

[6] R. Catts, "UNESCO Information Literacy Indicators: Validation Report University of Stirling", United Kingdom, February, 2010.

Articles in a journal:

[7] T. Takala, "Contributions of Formal Education to Social Development:: What do we know on the basis of Research Evidence?", *Journal of Education and Research* Vol. 2, pp. 1-8, 2010.

[8] K. Siakas, P Makkonen, E. Siakas, E. Georgiadou, H Rahanu, "Social Media Adoption in Higher Education: A case study involving IT/IS Students and Teaching Staff", *International Journal of Social Media and Interactive Learning Environments*, 2017

<http://www.inderscienceonline.com/doi/abs/10.1504/IJSMILE.2017.086094>

[9] R. Kop, "The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course", *International Review of Research in Open and Distance Learning*, Volume 12, Number 3, Retrieved 16th January 2016, from IRRODL, <http://www.irrodl.org/index.php/irrodl/article/view/882>

[10] H. Rahanu, E. Georgiadou, K. Siakas, D. Eckert, G. Abeysinghe, "Towards Relating Delivery Methods and Examination Success: Lessons Learned from the VALO LLP Project Case Study", *Journal of Software Evolution and Process*, Wiley, Issue 8, pp. 555–564. 2015.

[11] Siakas, K., Gevorgyan, R., Georgiadou, E. (2011). IT Methods and Techniques Applied to Educational Quality Enhancement, *International Journal of Human Capital and Information Technology Professionals (IJHCITP)*, Vol. 2, No 3, pp. 79-90.

Articles in conference proceedings:

[12] E. Berki and E. Georgiadou, "Outcome-centred Evaluation of Traditional and Open and Distance Mode Teaching and Learning Methods for Software Engineers, EDEN 2001, Stockholm, Sweden, June 2001.

[13] E. Georgiadou and K. Siakas, "Technology-based learning - Cultural Dimensions and Considerations, The 8th International Conference on Software Process Improvement - Research into Education and training, Quality in Teaching and Technology Based Learning, INSPIRE 2000, Glasgow, UK, pp.23–34, 23-25 April 2003.

[14] E. Georgiadou, and K. Siakas, "Distance Learning: Technologies; Enabling Learning at Own Place, Own Pace, Own Time", in R. Dawson, E. Georgiadou, P. Linecar, M. Ross. G. Staples (eds). *Learning and Teaching Issues in Software Quality, Proceedings of the 11th International Conference on Software Process Improvement - Research into Education and Training, (INSPIRE)*, April, Southampton, UK, The British Computer Society, pp. 139-150, 2006.

[15] E. Siakas and A. A. Economides, "Adaptive Learning: A Proposed Mapping of Personality Types to Learning Styles", *Inspire 2012*, 20-23 August, Tampere, Finland, ISBN: 978-951-44-8901-3, pp. 29-41, 2012.

Social Media Learning

[16] P. Makkonen, K. Siakas, "Social Media Functionality in Higher Education: A case study involving IT/IS Students", 49th Annual Meeting of the Decision Sciences Institute, 17th to 19th Nov. <https://dsi-annualmeeting2018.exordo.com>), 2018.

- [17] V. Stoffova, L.Végh, K.Siakas, "Using Animations for Improving Learning", BCS Quality Specialist Group's Annual 20th International Conference on Software Process Improvement—Research into Education and Training (INSPIRE) conference, British Computer Society, London, UK, 2018.
- [18] E. Georgiadou, K. Siakas, S. Hatzipanagos, M.Ross, N.Paltalidis, "Towards a Framework for Process Quality Management of Distance Mode Research Supervision", *BCS Quality Specialist Group's Annual 20th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference*, British Computer Society, London, UK, 2018.
- [19] P. Makkonen, K., Siakas "Social Media Usability in Higher Education: A case study involving IT/IS Students", *SITE 2018—The Society for Information Technology & Teacher Education, Washington, D.C., United States, March 26-30, 2018*.
- [20] H. Rahanu, E. Georgiadou, K. Siakas, "Integrating Social, Ethical and Legal Principles Concerning Intellectual Property Rights and Virtual Learning Environments", *BCS Quality Specialist Group's Annual 20th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference*, British Computer Society, London, UK, 2018.
- [21] E. Siakas, K. Siakas, K. Tsitsekidou, M. "Using Social Media In Higher Education: An Approach for Active Engagement of Students", *Didmattech Conference, Trnava University, Faculty of Education, Slovakia, 23-24 June, pp. (Nr 26 in proceedings), 2017*.
- [22] M. Tsitsekidou and K. Siakas, "A Facebook Group among Postgraduate Students: Evaluation Results towards Learning", in M. Ross, G. Staples, J. Uhomobhi, "Education Quality Matters: Trends and Challenges", *BCS Quality Specialist Group's Annual 19th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference*, British Computer Society, Bournemouth, UK, pp.97-104, 2017.
- [23] P. Makkonen, K Siakas, E. Georgiadou and H. Rahanu, "Adoption and use of social media in learning and teaching. A cross cultural case study", *EdMedia 2016: World Conference on Educational Media and Technology to be held in Vancouver, Canada, June 26-30, 2016*. <http://aace.org/conf/edmedia/Proceedings> ISBN #978-1-939797-24-7, 2016.
- [24] K. Siakas, E. and Georgiadou, "Adoption of Social Media in Learning: a Student Perspective", in K. Phalp, V. Katos, S. Meaham, M. Ross, G. Staples, J. Uhomobhi, *Education Quality Matters: Trends and Challenges*, BCS Quality Specialist Group's Annual 18th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference, British Computer Society, Bournemouth, UK, pp. 61–73, 2016.
- [25] P. Makkonen, K. Siakas, E. Georgiadou, H. Rahanu, "Adoption and use of social media in learning and teaching. A cross cultural case study". *EdMedia 2016: World Conference on Educational Media and Technology to be held in Vancouver, Canada, June 26-30, 2016*. <http://aace.org/conf/edmedia/Proceedings> ISBN #978-1-939797-24-7, 2016.
- [26] P. Makkonen, E. Georgiadou, H. Rahanu, K. Siakas, "Adoption of social media in the teaching of IS/ICT: Comparing students to faculty members". In G. Chamblee, & L. Langub (Eds.), *SITE 2016: Proceedings of the 27th International conference of Society for Information Technology and Teacher Education* (pp. 2194-2200). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE), <https://www.learntechlib.org/p/171995>, 2016.
- [27] P. Makkonen, E., Georgiadou, H. Rahanu, K. Siakas, K. "What promotes the adoption of social media in the teaching of IS/ICT and what constrains it? - Students' perspective", *46th Annual Meeting of the Decision Science Institute, Seattle, US, Nov. 21-24*, available at <http://www.decisionsciences.org/Portals/16/Proceedings/AM-2015//files/p1041144.pdf>, 2015.

MOOCS

- [28] H. Rahanu, E. Georgiadou, and K. Siakas, "Heuristics for Ethical Development and Use of MOOCS", in M. Ross, G. Staples, J. Uhomoihi, "Education Quality Matters: Trends and Challenges", BCS Quality Specialist Group's Annual 19th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference, British Computer Society, Bournemouth, UK, pp.73-83, 2017.
- [29] H. Rahanu, E. Georgiadou, and K. Siakas, "A cross mapping activity showing the relationship between Information Literacy and cMOOCs", in K. Phalp, V. Katos, S. Meaham, M. Ross, G. Staples, J. Uhomoihi," Education Quality Matters: Trends and Challenges", BCS Quality Specialist Group's Annual 18th International Conference on Software Process Improvement - Research into Education and Training (INSPIRE) conference, British Computer Society, Bournemouth, UK, pp. 97 – 107, 2016.
- [30] E. Georgiadou, H. Rahanu, N. Khan, R. Colson, C. Sule, "Bridging the digital divide: towards shortening the road from illiteracy to information", 11th International Scientific Conference @Western Balkan Information Literacy" June 2014, At Bihac, Bosnia Hertzegovina, Volume: ISSN 2233-1689.
- [31] N. Yao, N.Paltalidis, L.Wang, "Bridging the gap of assessment and feedback using MarkUp –An Android app for fast marking and feedback of in-class assessments", 10th annual International Conference of Education, Research and Innovation, Seville, Spain, 16-18 November, 2017, SBN: 978-84-697-6957-7 / ISSN: 2340-109, IATED.
- [32] Eubanks, V. "Digital Dead End: Fighting for Social Justice in the Information Age", MIT Press ISBN: 9780262014984, 2011.