

**Professional and technological education in Brazil:
The expansion of the Federal Institute**

Adriano A. R. Barbosa

PhD Professor, Federal Institute, Brazil - Erasmus EBW+ Post-doctoral, Riga Technical University, Latvia

Present address: 450, Rio Grande do Norte Avenue, Caraguatatuba, Sao Paulo, ZIP 11665-310, Brazil

adriano@ifsp.edu.br

Abstract

The Federal Institutes of Education, Science and Technology of Brazil are professional schools concentrated in secondary / technical education, technical bachelor degrees, and short-cycle higher education. They are directly linked to the Ministry of Education through the Secretariat of Professional and Technological Education, and were created with the idea that professional education should train professionals to be capable of both working in the labour market, and of promoting regional development. Thus, the courses offered by the units must be considered in the context of the job market demanded by their region. This article presents the education system in Brazil and some elements of the historical, social, and economic context in the creation of the Federal Institute. The organisational model proposed, its growth figures in recent years, and the main challenges of bringing good results of this great expansion of professional education in the country, will be illustrated. These federal educational institutions have been remodelled and expanded widely. Since 2002, these schools represent the new model of professional and technological education in Brazil, which is experiencing the greatest expansion of vocational education institutions in its history. In less than two decades, the number of teaching units deployed reached 644, and in 2016, there was an increase of 377% in the municipalities served throughout the country. The development, recognition, and consolidation of the Federal Institutes are linked to a set of actions of the federal and regional government, companies, and society aiming to foment educational projects of social insertion for the community as a whole, by the contemporary educational model, preparing its agents and students not only for society, the market, and the world today, but also for the future, in the continuous pursuit of knowledge, innovations, and development towards the country's growth.

Keywords: Professional Education; Brazil; Federal Education in Brazil; Public Management

Experiences in Digital Video Composition as Sources of Self-Efficacy towards Technology Use

Merja Kauppinen, Carita Kiili, Julie Coiro

merja.a.kauppinen@jyu.fi

Abstract

Integrating technology into teaching in pedagogically purposeful ways is an important objective of pre-service and in-service teacher education programs. However, many teachers report a lack of confidence, limited technological competencies, and negative attitudes towards technology integration (Bingimlas, 2009). Because teachers' self-efficacy has been shown to be one of the most crucial factors in technology integration (e.g., Wang, Ertmer, & Newby, 2004), there is a need to understand the mechanisms that may raise teachers' self-efficacy towards technology integration. Hands-on experiences with engaging technologies may be one effective way to enhance teachers' confidence in using technology (Kiili, Kauppinen, Coiro & Utriainen, 2016). This study seeks to understand the types of self-efficacy sources that hands-on experiences with technology may provide pre-service teachers.

Participants were 37 voluntary students who took a course on digital literacies in one Finnish university. Of these students, 22 were enrolled in a teacher education program and 15 were enrolled in an administrative program for education. The main learning task in the course was to compose an argumentative digital video concerning digital literacies in small-groups. Each group also wrote a traditional essay that provided theoretical background for their video. At the end of the course, all videos were watched and discussed. After the course, students wrote a reflective self-evaluation report about their learning and group work.

We analyzed students' individually written self-evaluation reports and identified text fragments in these reports that revealed 1) sources of self-efficacy (Bandura, 1997) related to technology use, 2) students' willingness to use technology in their teaching, and 3) perceived value of technology use.

Almost half of the students spontaneously indicated some source of self-efficacy in their self-evaluation reports, without any prompting. Altogether, we observed 47 spontaneous expressions from which 29 were coded as related to sources of self-efficacy, nine were related to confidence or willingness to use technology in the future, and nine were related to the perceived value of technology use. Students reported mastery experiences ($n = 25$) more often than vicarious experiences ($n = 5$) as sources of self-efficacy.

Results show that digital video composition may be a good way to enhance students' self-efficacy related to technology use. Connecting this type of a course with a practicum where pre-service teachers could apply their learning experiences in authentic ways with real students could strengthen students' confidence even further.

Keywords: self-efficacy, self-efficacy towards technology integration, digital video composition, teacher education

Using backcasting to get there from here in teacher education

Peter Aibusson and Sandy Schuck

University of Technology Sydney

Abstract

In education there is an increasing need to be able to conduct research that considers and informs long term futures thinking and planning. This paper identifies a variety of futures thinking strategies and indicates how they might be used for research purposes in education. This session does not seek to predict the future but discusses the use of tools that enable future planning. The session will focus on scenario building and backcasting as research tools. Examples from recent research in teacher education futures will be used to illustrate research practices, analytical strategies, reporting strategies, possibilities and limitations of the research methodology.

A series of interviews and focus groups gathered data on perceptions of teacher educators about the drivers for teacher education in the future. These data were analysed using interpretive methods to construct sets of teacher education future scenarios. The scenarios were then discussed in workshops with teacher educators in Europe and Australia. The scenarios were revised on the basis of feedback from the workshops.

A group of teacher educators were then invited to choose one particular scenario from the amended scenarios. The focus of this presentation is on the methods used to consider how we might shift from a current trajectory to the different trajectory that would achieve that chosen scenario. The method used to consider the shift was backcasting. In backcasting, one considers a future and then maps the steps required to move from the present to this future. The paper reports on the backcasting process and discusses the implications for shaping teacher education.

A key finding of this research is that teacher education operates in an environment which is politically restricted and often externally controlled. This has resulted in a constraining of our capacity to imagine different possibilities for teacher education. Using futures methods provides instruments for opening up new possibilities in teacher education, for analysing what needs to change and for reviewing and critiquing the present.

Keywords: teacher education futures, backcasting, future scenarios

Team-Based Learning in Management

Jelena Stepanova, Mg. soc. sc

University of Latvia (Latvia), Management College (Latvia)

helen_stepanova@inbox.lv

Abstract

Management is one of the main subjects in business education. The implementation of appropriate teaching-learning approach, such as team-based learning, allows students to engage into educational process and demonstrate higher achievements in its acquisition. The aim of the article is to analyze the theory-grounded investigation to trace if the team-based learning is good for Management teaching and therefore serves as approbation of this stage of the research to continue it, as well as what the priorities are and if the learners accept them. The paper is an example of an interdisciplinary research and lies at the border of such areas as educational sciences, sociology and psychology. The article reflects the results of empirical research on team-based learning implementation in Management course in Latvian Business College where participated 10 first-year students, who mastered their skills and competences reaching an academic success through this approach. Mixed methods were used as the approach to research design, analysis of scientific literature, questionnaires, observations and interviews. Analyzing the results of the research it can be told that team-based learning in teaching Management proved to be successful tool as it assisted to academic success in discipline, communication and understanding of the business environment peculiarities through teamwork and critical thinking and majority of students gave a positive feedback. The research demonstrated that team-based learning gives more freedom and authorizes the students to be more responsible for their own studies and knowledge as the process involves both individual work and teamwork and the contribution to the team is significantly important there. Such self-determination leads to success as in academic studies as in life-long competences and proves team-based learning approach to be a useful and transformative tool for teaching Management.

Keywords: team-based learning, Management, university education

Event Horizon: Helping students to learn what nobody knows yet

Dra. NEUS LORENO GALÉS

nlorenzo@xtec.cat

Generalitat de Catalunya, Co-Founder of the Transformation society

Professor RAYMOND GALLON

ray@transformationsociety.net

University of Barcelona, Co-Founder of the Transformation society

Abstract

The theoretical framework: global policy making. In this presentation, attendants will discover pedagogical principles designed for a globalized, hyper-connected world. We will explore the recommendations for governance of human-robotic interaction (European Parliament 2017), and share a mainstream vision of global competencies (OECD 2018), towards a common sustainable educational system (UNESCO 2030).

It is difficult to clearly identify the world in which future teachers are going to work, and the contexts in which students will have to learn. The proliferation of connected objects known as the Internet of Things is leading us toward an uncertain and unseen horizon of wearables, embedded, and implanted devices. The development known as Industry 4.0 means that robotics, artificial intelligence agents, and hybrid reality universes are expanding and creating their own transmedia ecosystems.

Educational needs become unclear when communication processes escape the human environment and enter the hidden realm of machine-machine exchange, where *deep learning* and *big data* evolve autonomously. The event horizon of communication, in a robot-based educational ecosystem, is veiled by the unknown, unreachable by basic human communication skills. As teacher educators, we face the immense challenge of preparing young teachers not only to face this unknown world, but also to help their pupils learn to navigate in it, and decide how it should evolve.

The research: evolutionary paradigms. Historically, education focused on acquisition of literacies and mastery of content. Since the Trivium and Quadrivium Medieval curricula, all standard syllabi included a list of “must know” content, essential for the continuity of culture. With the advent of the industrial revolution and the consolidation of public educational systems controlled by the state, curriculum became a compound of skills, competencies, and methodologies for helping students to develop “know-how.” Until now, the emphasis has been on processes and procedures necessary to become an efficient worker and good citizen. This is no longer enough. Now that we are entering a reality where content is already provided through connectivity, and learning processes are guided by a variety of automated tutorials, the added value of human teachers needs to be re-examined.

The instruments: a humanistic approach for a hybrid world. In a robotics-based learning context, human teachers must help students find their strengths, raise students’ awareness, and open lifelong learning perspectives for everyone. The teacher’s role will grow when they encourage students to learn how to be, and how to be with others, in a hyper-connected world that is simultaneously more fragmented and more collective than ever.

Keywords: Hyper-connectivity, Hybrid-communication, Transmedia, Internet of Things, Human-robotic interaction, Learning paradigms, Global competencies

Organizational learning and innovation in the Hungarian public education system

László Horváth

horvath.laszlo@ppk.elte.hu
Eötvös Loránd University, Institute of Education
Eötvös Loránd University, Doctoral School of Education

Abstract

The discourse on innovation is often one-sided, focusing mainly on technology and products, but as several OECD (2004, 2006) analysis suggests, there is a rising interest towards other areas of innovation that are included in the Oslo Manual (OECD, 2005), focusing on mainly service sector and public sector innovations (process, organizational and marketing innovations). In 2016 started “The Emergence and Diffusion of Local Innovations and their Systemic Impact in the Education Sector” research project which aim is to discover the unique field of educational innovations.

The first phase of the research project involved a large-scale quantitative survey-based research where an online questionnaire was sent to all educational institutions in Hungary (from kindergarten to secondary and vocational schools – even to higher education and for-profit adult education institutions, but they are not covered in this presentation). We received 6455 institutional responses (~43% response rate). The goal of the short, self-developed survey was to identify the most innovative educational institutions for further research and in that term, we created a model for innovativeness and organizational learning based on literature review and previously applied scales in addition to other descriptive questions about the nature of the emergence and diffusion of innovations (name a specific innovation, which institution they adapted the specific innovation etc.).

In this presentation the interrelation of organizational learning capacity (adopted from Bess, Perkins and McCown, 2010) and certain aspects of innovativeness will be described. With an exploratory factor analysis we created a 3 component model for innovativeness (innovation activity, innovation awareness and innovation dynamism) and a 3 component model for organizational learning capacity (support for organizational learning, organizational reflexivity and external/internal alignment) with high reliability (Cronbach’s alpha > 0,8). This means that the created factor models are suitable to describe the Hungarian education institutions from a certain aspect. In the next phase of the research we will conduct case studies to better understand the quantitative results.

Keywords: organizational learning, innovation, Hungary

Current issues of the development of digital literacy in school education and in teacher training

Miroslava Cernochova, Tomáš Jeřábek, Jiří Štípek, Petra Vaňková

Charles University, Faculty of Education

miroslava.cernochova@pedf.cuni.cz

Abstract

From 2018 nine faculties of education in the Czech Republic will collaborate together in a national project focused on pupil's and teacher's digital literacy development cross curriculum. The project will design a model how to implement digital literacy in pre-school, primary and secondary school education including didactics in teacher education. Faculties of education will develop and test teaching methods how to achieve digital literacy cross curriculum in teaching practice.

INNOVATION AND CREATIVITY IN TEACHER EDUCATION: THE CASE OF THE OXFORD INTERNSHIP SCHEME

Ann Childs, Viv Ellis

University of Oxford
Kings College, London

Abstract

The Oxford Internship Scheme, a one-year research-informed programme of initial teacher education (ITE) for secondary school teachers in England, was launched in 1988. This paper reports on the history of the scheme's development by a partnership between Oxford University (England), the local education authority in Oxfordshire and local schools. In doing so its analysis shows how the scheme's development from 1973 to 1987 can be characterised as an instance of innovation and collective creativity. The paper draws on two main data sets: first, recorded interviews and unrecorded conversations with key protagonists from that period; second, an archive of documents collected covering most aspects of the scheme's development.

Drawing on theoretical perspectives from Miettinen (2006, 2014) analysis of the data show how the development of the scheme could be characterised as an innovation that was a collectively creative response to a ground up feeling of a need to change amongst its principal actors. The findings explore the importance of this 'felt need to change' in order for innovation to occur. The findings also draw on theoretical perspectives on change and innovation from Noteboom (2000) to argue that many actions of the key protagonists over the period of time could be characterised as a form of collective 'tinkering (*bricolage*). In particular, Noteboom's work illuminates how these acts of tinkering introduced new resources, experiences and knowledge from, for example, local schools and were significant in the scheme's development. The paper concludes by considering implications for innovation in teacher education in the current policy context in England that has seen the government taking more control from the centre, specifying standards and re-organising teacher education through more school-led ITE. In particular it considers how a 'felt need to change', and subsequently innovation in ITE, could emerge in the current policy context.

Keywords: Collective creativity, initial teacher education

Enhancing the quality of teacher educators - patterns in professional development

Leah Shagrir

Abstract

The research presented seeks to identify patterns of activity in the professional development of teacher educators. For the purpose of conducting the research, narrative research methodology was selected, and semi-structured in-depth personal interviews were held with 19 faculty members. The group of interviewees was differentiated by academic degrees, number of years' seniority in teaching at the college, and the positions they occupied.

From an analysis of the findings regarding the professional development two clear patterns of work emerge: a pattern of action that contributes to the faculty member's professional promotion, and a pattern of action that contributes to his/her personal growth.

The conclusions that can be drawn from the research demonstrate directions and practical and applicable recommendations for encouraging and increasing teacher educators' academic activity.

The conclusions relate to three aspects: the faculty member as an individual, the faculty as a community of colleagues, and the higher education institution. The conclusions call for urging teacher educators to engage in academic activity and to relate to their professional development in depth in order to advance and develop on both the professional and personal levels.

In order to encourage such development, the academic institutions should institute platforms and infrastructures that facilitate the creation of communities of colleagues operating through high-caliber professional activity. This will all help create a professional and expert teaching faculty in which every teacher enjoys a sense of belonging to the professional community and works toward producing good teachers.

Keywords: Teacher education; Teacher educators; Professional development; Community of colleagues; Higher education

Investigating novice EFL teachers' beliefs about the use of ICT in English language classroom in Latvia

Mg. educ.man. Olena Zhukova

PhD student, Daugavpils University, Latvia
lerial2@inbox.lv

Abstract

In the past 20 years, the investigation of novice teachers' beliefs and actual classroom practices has received much attention from a great number of researchers. There is overwhelming evidence from research (Larenas et al 2015; Pajares 1992; Johnson 1994; McAninch 2003; Richards et al. 2001, Fives & Gill 2014) that indicates that teachers' beliefs guide their behavior and influence teachers' classroom practices. However, while it has been indicated in the literature that it is essential to investigate teachers' beliefs in order to understand and improve the quality of language teaching and learning, empirical studies on novice teachers' beliefs about teaching and learning procedures, especially in foreign language teaching, are limited in Latvia.

The article presents a case study that investigated and compared novice EFL teachers' beliefs about the use of ICT tools in English language teaching and their actual classroom practices. A group of 32 novice EFL teachers (with up to three years of teaching experience) working in 24 Latvian comprehensive schools participated in the survey.

Specifically, the article discusses novice EFL teachers' beliefs about (1) the role of teacher in today's EFL classroom, (2) the most effective ways of integrating ICT into English teaching and learning, and (3) the challenges and barriers faced by the novice EFL teachers in terms of the use of ICT in the EFL classroom. Furthermore, the novice EFL teachers' actual classroom practices were investigated and analyzed.

To address the questions raised in the survey, mixed method research design was adopted. The data was collected over a nine-month period in 2016 using semi-structured interviews, observations of novice teachers' actual classroom practices, and questionnaires.

The findings of the survey suggest that novice EFL teachers have complex belief systems about the use of ICT in EFL classroom that sometimes did not correspond to their real classroom practices for a number of complex reasons, including lack of specific training, practical experience and skills, students' expectations, lack of appropriate resources and teaching aids, lack of school administrators' commitment and other contextual factors.

The findings might have implications for school administrators, teacher educators, institution that provide teacher professional development courses and novice teacher induction programs, as well as for teachers themselves.

Keywords: novice teachers; teacher beliefs; teacher education; foreign language teaching; ICT

Digital Childhood: some reflections from the point of view of philosophy of education

Zanda Rubene
University of Latvia

Abstract

The presence of information and communication technologies in the children's everyday life that promotes changes both in their world perception, emotional attitudes and social skills change also the social views about childhood as a socially constructed phenomenon in its traditional understanding and makes the researchers turn seriously to the analysis of digital childhood. The latest research in social sciences confirms that the user of technologies in the second decade of the 21st century in the society of well-being is already 3-4 years old. Researchers describe the culture of today's children as different, unknown and incomprehensible that urges researchers seek the answers to the questions: how will the changes introduced in children's social habits by digitalization influence their life in future? Do we use technologies in our everyday life as a possibility to promote the children's development or, just on the contrary, -they become a threat? How do the changes in children's social habits brought about by technologies transform the society's understanding of childhood as a social phenomenon?

Keywords: research on childhood, digital childhood, upbringing in the family, risks in upbringing caused by digitalization.

LEGO robot as teaching tools in vocational teacher education in Uganda: object two think with

Birger Brevik

Oslo and Akershus University College, Norway, birger.brevik@hioa.no

Abstract

This study deals with the use of LEGO general and LEGO Mindstorms as a technological learning tools in teacher training for vocational in Uganda. An earlier study in the use of LEGO Mindstorms in elementary schools to stimulate interest in technological vocational show that teachers believe this is an appropriate tool (Brevik, 2007). The same applies to the use of LEGO Mindstorms as teaching tools in secondary vocational school, where teachers meant this is a useful tool for simulation of technological work processes (Brevik, 2014).

Based on the results from these two studies, we have established two technological learning workshops where LEGO Mindstorms used as the central learning tool, linked to teacher training for vocational, respectively Norway and Uganda. Informants in this study is the master students in vocational education from Uganda who attended a workshop where they were introduced to LEGO and LEGO Mindstorms as learning tools. The issue in the study are as follows: Can LEGO and LEGO Mindstorms be used as teaching tools in vocational education in Uganda?

To answer this question, I interviewed in December 2016 five students from Uganda for their opinion on the use of LEGO as a learning tool (Kvale & Brinkmann, 2009). Four of these five students attended a LEGO workshop in Norway while one student has attended a similar event in Uganda. Both workshop in Norway and Uganda were facilitated by the author, and was conducted with the same equipment. Interviews were Recorder as MP3 files, and analyzed using the software atlas.ti, and by the methods described as constant comparative method (Charmaz, 2014). As theoretical platform used Paperts learning philosophy constructionism (Ackermann, 1996; Papert, 1980; Resnick, Martin, Sargent, & Silverman, 1996).

The analysis shows That students find this very Useful, especially in connection with STEM education (Hynes, 2009).

Keywords: Teacher training, LEGO, learning tools, robotics, STEM

Guidelines for design of e-study materials

Kristīne Mackare
Liepāja University

Abstract

E-study use is increasing, its main content is information for self-education and it is delivered to the user through the modern technologies that provide more great opportunities. To successfully reach the user, information must be presented in a comprehensible and easy to remember way.

The article devoted to the recommended presentation of information in e-study in order the text can be easier to read by the human and it can be better to perceive and memorize. It is dedicated to technologies that could help to build and analyse types of presentation. There are analysed several technology products and presents various of examples.

The authors offer recommendation Guidelines for e-study materials development and presentation, assessment and presenting, considering user needs and requirements of research as well as literature study research, and based on the visual science foundations. The focus for the development of Guidelines was particularly on the visual function importance in reading and learning process as clear and stable text perception primarily provides by near visual functions. There are in a structured manner presented the recommendations for a user-friendly e-study material design - style, size, spacing, position, colour - which should be applied for easy perception with visual processes, thus helping the learning process and to facilitate memorization.

As it is more need in teaching methods and learning environment that is user-oriented, then guidance specifics may be different for each of the e-study targeting groups that are divided primarily into three groups: children, adults, and seniors, because each group has a different way of the needs, requirements, and visual perception, as well as it is be need to consider other existing features of user, which may differ from the standard and affect efficiency of recommendations. In this work deals with a part of the adult group - students.

Keywords: e-study, technologies, education, guidelines, e-study environment, material design, visual perception

Robotics Studies İntegration of Secondary Science Laboratory Practices as STEM

Barış Elbir

Abstract

In this study, the effects of robotic laboratory activities within the scope of STEM education in the 7th grade of primary education on the academic achievements of students, self-learning readiness in the laboratory, attitudes towards STEM were investigated and semi-structured interviews were made with the students about laboratory activities.

This study, in which experimental model with pre-test-post-test control group was used as research model, was carried out with 96 students attending seventh grade of private elementary school in 2014-2015 academic year. In the experiment group, the science experiments were carried out in the robotics laboratory with Lego MindStorm EV3 and in the control group in the classical science laboratory.

In this model, which uses semi-experimental design with pre-posttest matched control group, the groups were chosen as experimental and control groups. The experimental procedure was applied only to the experimental group. At the beginning and end of the study, both groups were measured using the same measuring tools.

Analysis of quantitative data was done by Kolmogorov Smirnov-Z Test, Dependent Sampling t-Test and One-Way Anova (One-way ANOVA) in the SPSS 17 package program. Qualitative data were evaluated using descriptive analysis technique.

As a result, it has been determined that robotic laboratory activities significantly increase students' academic achievement, self-learning readiness in the laboratory, and attitudes towards STEM. Qualitative data analysis results for student interviews support quantitative results.

Keywords: Robotic, science, labvorary, education, technology

Innovation – regeneration in teaching and learning

Nevrije Bislimi – Ismaili

nevrie.ismaili@uni-gjilan.net

Abstract

In recent years, educational innovation has been continually discussed when teachers use active methodologies and new technologies in the classroom to teach their students. However, if we review the historical evolution of education, we discover that novelty have rather little, since from the beginning of time active methods are used to learn.

Motivated by a generational change and by the influence of the Information and Communication Technologies, is becoming more common to find educational models that already once put in practice. And is that innovation does not form must have new ideas, just chasing those who are shuffling from prehistoric times and adapting them to the reality of the classroom of the 21st century. A brief review of the literature is intended to introduce the concept of educational regeneration as a necessary concept to define the transformation that is occurring in today's education.

Keywords: Educational innovation, Educational Regeneration, Active Methods, History of the Education.

The evaluation of an experience of the development of massive open online courses

Xhevdet Thaqi, Basri Ahmedi, Ekrem Alimi, Ragmi Mustafa

xhevdet.thaqi@uni-gjilan.net, basri.ahmedi@unigjilan.net, ekrem.halimi@uni-gjilan.net,
ragmi.mustafa@uni-gjilan.net
Faculty of Computer Sciences
University "Kadri Zeka" in Gjilan, Kosovo

Abstract

Motivated by a generational change, by an unsustainable economic situation, as well as by the influence of the Information and Communication Technologies, is becoming more common to find educational models that already once put in practice. The European Higher Education Area (EHEA) has demanded the adaptation of the university curriculum to the requirements stated in the Bologna Declaration.

Since the 2015 –2016 academic year, "Kadri Zeka" University offers on line teaching platform called "e-learning" for bachelor degrees in the fields of Computer Sciences, education, economics and law. In order to diversify its supply and adapt it to the new claims of the demand, it also offers, for certain courses, on-line bachelor degrees. The goal of this project is to offer a description of the experience the "Kadri Zeka" University has in the on-line teaching area and, more specifically, to analyse the results obtained in the all subjects, from the Computer Sciences Bachelor Degree. The objective is to assess the success of thee platform, as well as to bring forward the points that have carried a specific difficulty in the development of the on-line learning.

The tool "e-learning" allows the teacher to edit any teaching materials in order to turn it into a lesson, by mean of actions such as adding notes and quizzes. In this paper we will show our experience of using e-learning platform to create lessons to enhance the teaching of courses for computer sciences studies. Besides, we suggest potential applications of the tool in other contexts.

Keywords: university study, teaching, MOCC, ICT, European Higher Education Area, e-learning, video-lesson.

Online science teacher education: the case of a master's program

Laurinda Leite* & Luís Dourado

IE/CIEd, University of Minho, Braga, Portugal

*lleite@ie.uminho.pt

Abstract

Science teaching requires the mastery of a variety of knowledge components, which starts being developed within initial teacher education programs. However, in-service science teachers, like any other teacher, need to continuously develop and update their knowledge base namely with regard to science knowledge and to science pedagogical content knowledge. Teachers can develop it, for instance, through in-service short courses and master's programs. The Portuguese Ministry of Education requires teachers to take in-service training. However, teachers feel an ever-increasing difficulty in attending such courses due to school demanding timetables and to the distance between their work place and the training institutions. These are the main reasons why UMinho offers an online master's program, since 2012, to science teachers. The LMS used to run the program is Blackboard, which is the UMinho e-learning platform. It offers many facilities, namely forum, video chat, and file exchange and messages. This paper describes: how the master program was re-structured to fit the online demands; the types of key pedagogical activities that are offered to students; and students' reactions towards the master's program and to its course units. Data were collected by means of an online open-ended questionnaire from two groups of students which attended to program. The majority of the students were happy with the program, and felt that it was well organized and that it offered them a unique opportunity to take a master's program. Besides, they valued the chat sessions and stated that they learned more than they would learn if they were attending a face-to-face master's program. Thus, from the students point of view, online master's programs may not only be a valid alternative to a face-to-face master's but they may also be the only possibility that they have to attend this kind of in-service training as they eliminates the distance issue and offer a flexible timetable that fits their work and home timetables.

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Keywords: in-service teacher education, science, master's program, online teacher education

Curriculum Design for Blended Learning

Maija Kokare, Madara Skudra

Abstract

Effective, meaningful and balanced use of information communication technologies (ICT) at schools is essential to prepare students to live and work in the 21st century; however, most of the schools in our country do not have evidence-based policies on ICT integration in teaching and learning. The Erasmus+ supported project “B-Learning: Curriculum Design for Blended Learning” focuses on the pedagogical innovations that foster ICT contribution for learning in the best possible way. The project combines theoretical considerations with good practice examples, practical implementation and research. Various resources and training approaches for school leadership teams have been developed during the project to help leadership teams transform traditional schooling by combining on-line and face-to-face teaching-learning experiences. Both theoretical and practice based conclusions, as well as a toolkit for introducing blended learning in schools, will be demonstrated via poster presentation. The toolkit consists of (1) professional development program (PDP); 2) guidelines for trainers; 3) course materials for PDP; 4) guidelines for school teams; 5) self-evaluation tool for school teams.

Keywords: Blended Learning, Leadership

Digital literacies for language learning and teaching: from a conceptual framework to the design and development of an online portal

Odette Gabaudan,

Odette.gabaudan@dit.ie
Dublin Institute of Technology

Susanna Nocchi

Dublin Institute of Technology

Laura Mc Loughlin

National University of Ireland, Galway

Abstract

Advancing digital literacy among language learners and teachers is, to quote Hicks and Turner (2013), no longer a luxury. As technology is pervading our daily lives, there is still an acute requirement to equip students and language learners more specifically with the digital competencies that will enable them to flourish in a multilingual and multicultural digital environment. In parallel, language teachers need to reinvent their teaching to tie their use and understanding of digital tools to progressive pedagogies. The needs identified for this project presented here aims to address these needs within a context where OERs are a growing trend.

This paper will describe and evaluate the trajectory of an Irish nation-wide project that aims to enhance digital literacies for language learners and teachers, namely digilanguages.ie Following an initial phase that consisted in identifying key language learning contexts that require digital competencies, a suitable conceptual framework (Dudney, Hockly & Pegrum, 2013) was identified to underpin the ongoing design and development of an online portal. The framework allowed for the integration of digital literacies and the learning of a language in a variety of contexts. One of the key challenges addressed in this paper is the translation of the framework into the design and development of a coherent and integrated resource that will inspire both language learners and teachers so that language learning and teaching will be transformed and adapted to a modern and increasingly complex society. Ensuring sustainability for the resource is at the heart of both the technological infrastructure and the participating institutions' commitment. Therefore an iterative consultation process with key stakeholders (through online surveys and face to face discussions) has informed each stage of the design and development of the resource. It aims to strike a balance between allowing learners/teachers to interact with the material according to their preferences while also providing enough guidance for independent language learners/teachers who wish to navigate the often unpredictable multilingual and multicultural exchanges of our modern world (Kramsch, 2008). In the context of the growing trend of OERs, this online portal is designed as an open educational resource, therefore freely accessible to language learners and teachers within and beyond Ireland.

Key words: digital literacies, language learning, OER

The Importance of Emotional Intelligence in a Creative Activity of the Pedagogy Students

Ph.D. Katarzyna Szorc

University of Białystok

Poland

Abstract

There is a lot of research that proves that positive emotions and mood play an important role in a creative activity of humans (Abele, 1992; Davis, 2009; Kramer, 2003; Tokarz, 1991). Particularly valuable is the ability to accept experienced emotions and the skill to react accordingly as well as absorbing them into the thought process and ability to invoke and regulate them. The listed predispositions are, according to Salovey and Mayer's model, components of emotional intelligence. Therefore, emotional intelligence could encourage creative activity as it facilitates "emotional creativity cost" management (Nęcka 2001). In my paper I will present results of research carried out among pedagogy students, i.e. future teachers candidates. It was assumed that there is a correlation between emotional intelligence and creative activity of them. In the research INTE Emotional Intelligence Questionnaire (N. S. Schutte, J. M. Malouff, L. E. Hall, D. J. Haggerty, J. T. Cooper, Ch. J. Gloden, L. Dornheim) was used in a Polish version made by A. Ciechanowicz, A. Jaworowskiej, A. Matczak (2000) as well as Creative Behavior Questionnaire KANH, S. Popek (2000). The result can contribute to intensification of creative activity of teachers what in turn can translate into shaping of innovative school environment.

Key words: emotional intelligence, creativity, student, teacher

Do Teachers Really Need a Master's Degree? Student Teachers' Perspectives

Marta Kowalczyk-Walędziak

University of Białystok

Otilia Clipa

University of Suceava

Linda Daniela

University of Latvia

Abstract

Over the last two decades, considerable attention has been paid in European debates on teacher education to upgrading teaching qualification at the Master's level. Despite this European policy focus, still little is known about the usefulness of Master's level preparation for teachers' professional practice. A significant gap remains relatively unexplored: the views of student teachers themselves. The study presented in this paper seeks to add to the existing body of knowledge by focusing on Polish, Romanian and Latvian teacher students and exploring their perceptions of the usefulness of Master's studies for their future teachers' practice in terms of (1) developing the capacity to apply theory to practice and (2) gaining the ability to use and conduct research in professional workplace settings. The questionnaire survey was administered to 244 student teachers enrolled in Master's programmes in Polish, Romanian, and Latvian universities. The results of this study indicate that generally the surveyed student teachers declared that the Master's level education was an appropriate and useful type of education for teachers, but at the same time they rated relatively low the usefulness of educational theory ($M=2.97$) and research-related skills ($M=3.34$) gained and deepened during their Master's studies for their future professional practice. Several issues which emerged from the results are discussed, with reference to implications for current efforts in developing teaching as a Master's level profession.

Keywords: Master degree, student teacher, education for teachers

Life in the stream of information – diagnosis and determinants of students' information literacy in the aspect of learning in digital culture

Dr hab. Katarzyna Borawska-Kalbarczyk

Faculty of Pedagogy and Psychology University in Białystok
ul. Swierkowa 20
15-328 Białystok, Poland
e-mail: borawska@uwb.edu.pl

Abstract

The article is a report from a study whose aim was to diagnose, differentiate and forecast the directions of information literacy development among students. The theoretical background of the text is the profile of contemporary civilisation changes, related to the dynamic development of information society. The text is particularly focused on information changes and indicates both the positive aspects of the present abundance of information and the undesirable effects of information overload.

The author demonstrates that in the face of information explosion and the dominance of digital culture, information literacy is particularly significant. Information literacy is defined as a set of skills necessary to recognise, find, evaluate, select and effectively use information. The author proves that being informationally literate is a prerequisite for an effective participation in information society and an important component of cultural literacy, allowing a human being to participate in the process of life-long learning.

The study was conducted on a group of first-grade students from randomly selected schools of secondary education in Poland. The study was designed to use the grading scale method. The findings of the study indicate that the level of information literacy among the study participants is average and differs according to the variables (socioeconomic status, level of cultural activity, sex of the student, type of school, school's location, school achievements).

Analysis of the study findings demonstrates that only a small number of study participants use information resources of digital culture in a desirable and positive way, while more often their use of information is superficial. Thus, there emerges one of the most important challenges of information society, which is to create a suitable learning environment that will limit the reasons for students' helplessness towards the overabundance of information, develop a suitable information culture among students and reinforce the processes of independent learning.

Keywords: information literacy, digital culture, information overload, life-long learning

A PROPOSAL FOR AN IN-SERVICE TEACHER TRAINING COURSE ON SEXUALITY AND DISABILITY BASED ON A REVIEW AND META-ANALYSIS OF INTERVENTION STUDIES

Ana Cláudia Bortolozzi Maia

Faculty of Science, São Paulo State University, Brazil

Teresa Vilaça

Institute of Education and Research Centre on Child Studies, University of Minho, Portugal

Abstract

The relationship between sexuality and disability is still complex, especially in the school context, where teachers who are generally not trained in this area must undertake sexuality education (SE). The aims of this study were to: 1) review and analyse the existing literature on SE school interventions for children and adolescents with intellectual and physical disabilities; and 2) plan a proposal of an in-service teacher training and education course for teachers working on SE with students with disabilities, together with all students within an inclusive school.

Relevant databases (Emerald, Science Direct, Springer, Taylor & Francis and Scielo) were searched to collect the papers of last five years using two keywords: 'sexuality education' and 'disability'. The abstracts of the 891 papers collected were read to select only those that present data on SE of individuals with disabilities in the school community, working with them as a different group or integrated into the SE of the school as a whole, together with all their classmates. Two authors independently reviewed these papers (n=315) for data extraction. The data on SE interventions for students with disabilities were grouped into convergent elements, resulting in the planning of a program focused on teacher education which includes the topics and pedagogical methods / techniques that are most effective in developing students' competencies for the promotion of their own sexuality and sexual health and those of the community. These topics were the following: the history of SE; the bio psychosexual development of children and adolescents; the development of sexuality in individuals with different disabilities; legislation and rights in inclusive education; and the importance of dialogue with family members. The most efficient methods / techniques were: the initial survey of teachers' beliefs, conceptions and information about sexuality and about disabilities; the identification and discussion of teachers' difficulties, demands and expectations on the subject; the exploitation of films and documentaries; the use of case studies and role-playing; Internet-oriented investigations and investigations on the library and other contexts; group discussions; to know the pedagogical resources available to be used in the school; the construction of pedagogical resources by teachers; the planning of participatory and action-oriented projects with students; and techniques for the identification of health problems in the context, monitoring and reflection on practices and final evaluation. The proposed theoretical-practical in-service teacher training course, based on a historical-cultural approach, integrates the previous knowledge and will be applied in later studies.

Keywords: Sexuality education, individuals with disabilities, in-service teacher training, inclusive schools, Portugal, Brazil

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How do teachers use soap opera as a political and educational device after an in-service teacher-training course in sexuality education?

Teresa Vilaça

University of Minho, Braga, Portugal

Elizane de Andrade

University of Estado de Santa Catarina, Florianópolis, Brazil

Sonia Maria Martins de Melo

University of Estado de Santa Catarina, Florianópolis, Brazil

Abstract

Foucault's sexuality device consists on a relationship between forces of power and resistance that becomes a strategy of management and control of the body and ways of being, and control of populations. It can be established between what is said and not said including discourses, institutions, architectural organizations, regulatory decisions, laws, administrative measures, scientific, philosophical and moral statements and philanthropic propositions. Based on this concept and Foucault's concept of modes of subjectivation, Fischer discusses the concept of media as a pedagogical device, showing how media and in particular television, influence the formation of individuals and subjectivities producing knowledge that contributes to educate individuals about their ways of living and being in their culture. Therefore, this paper aims: 1) to characterize the teachers' perceptions on the potential of the topics developed in a workshop to plan, implement and evaluate a school sexuality education (SE) intervention using a soap opera as a pedagogical device; 2) to describe the type of SE interventions carried out.

This study is a participatory action-research which started with an exploratory semi-structured interview, previously validated, applied to teachers interested in attending the in-service teacher training workshop in SE (N=15). The results obtained were used to plan the workshop (25 hours face-to-face and 25 hours in the school context), which was organized into three main topics: paradigms of SE and participatory and action-oriented SE projects; sexual rights as human rights; the Gabriela soap opera as a political and educational device. During this training, teachers organised in small groups (N=4) of the same school planned the SE intervention to be developed, including the selection of the soap opera characters they wanted to explore pedagogically. Throughout these two phases data were collected through the teachers' journals, the documents produced by teachers and students, and a final semi-structured interview applied to teachers. It was observed that although all these teachers consider action-oriented projects with the use of soap opera as a pedagogical device as the most adequate methodology for SE, many chose to use other student-centred approaches for the exploitation of pedagogical devices (n=3). In addition, it was observed that all groups of teachers opted for the soap opera characters that allowed them to promote students' (de) construction of gender (n=4) and sexual identities (n=1) stereotypes. This study has great importance as it contributes to the evidence regarding the use of soap operas as a political and educational device in SE.

Keywords: Sexuality education, sexuality device, pedagogical device, in-service teacher training, Portugal

Acknowledgements

This work was partially funded by the Portuguese National Funds through the FCT (Foundation for Science and Technology) and co-financed by the European Fund of the Regional Development (FEDER) through the compete 2020 - Operational Program, Competitiveness and Internationalization (POCI) under the CIEC (Research Centre on Child Studies at the University of Minho) under the reference POCI-01-0145-FEDER-007562.

Production of bilingual didactic videos for deaf engineering students: a case at Federal University of Viçosa (Brazil)

José Timóteo Júnior

André Luiz Santos de Souza

Vinícius Catão de Assis Souza

Silvane Guimarães Silva Gomes

Abstract

This article discusses a project articulated by multidisciplinary group at Federal University of Viçosa (Brazil), related to educational technology used to favor inclusion of deaf students in the Civil Engineering course (production of bilingual videos). These didactic materials were adapted for deaf students, focusing the process of educational inclusion by adaptive technologies. Technical subjects were translated from Portuguese to Brazilian Sign Language (LIBRAS), using a visual design and language adapted to favor deaf learning and professional development in the engineering field. The methodology used to describe the project steps was an ethnographic research and participant observation. It was analyzed the use of new information and communication technologies (NICT) in the production of technical process of "signed didactic videos", as well as the linguistic transposition and the steps of the content production, planned to attend the first deaf student in this course. To achieve that purpose, it was structured a discussion group, as well as meetings with LIBRAS' interpreters, and the deaf student. We also visited TV INES, a TV complex that deals exclusively with production of bilingual video contents (www.tvines.org), and participated of the Bilingual Forum in National Institute of Deaf Education, at Rio de Janeiro (Brazil). After these steps, the production process of "signed didactic videos" were planned to implement the content of three Civil Engineering subjects to the LIBRAS. The didactic materials were intended to be available online, watchable and downloadable: the signed videos bring content in LIBRAS and animated images, mixing videos and dynamic slides. Finally, it was possible to conclude that due the sign language, the perception and deaf's construction of knowledge prioritize the imagery. So, the NICT were used in combination with other visual tools to permit the educational inclusion, favoring the learning process and professional training of an engineering' deaf student.

Keywords: Brazilian Sign Language (LIBRAS), NTIC, Signed didactics videos, Bilingual content, University' deaf Inclusion.

Education for creativity: tourism employers' preferences

Kamila Perederenko

Turiba University, Riga, Latvia, kamila.perederenko@gmail.com

Ineta Luka

Turiba University, Riga, Latvia, Ineta@turiba.lv

Abstract

Tourism industry is an important employment provider internationally. This sector of the global economy continuously faces technological and innovative development. That's why it highly demands creative and competent tourism specialists which can generate new ideas and technologies, bring them to the market and implement them in the workplace. So, the development of creativity and innovation-related skills beyond domain-specific skills in tourism higher education is a very topical issue.

Skill shortages have caused significant numbers of tourism establishments worldwide to have difficulties meeting quality standards. Employers in the European Union experience skills shortages related to increasing specialization within industry or to the fact that education curricula have not kept pace with the innovation and creativity development of the sector. In Latvia also, it was indicated that a big gap exists between supply and demand for quality personnel. Graduates from tourism education institutes and vocational schools cannot completely fulfill the industry needs in terms of quality and quantity. Thus, Latvian tourism industry lacks innovation performance and fostering of employability and creativity related skills in education doesn't meet the industry needs.

The purpose of the current exploratory research is studying the preferences of Latvian tourism employers on creativity, domain-specific skills and competencies of future tourism specialists. Furthermore, it has been researched how this demand could be accomplished within the tourism higher education. In order to attain the aim of the study fifteen managers involved in Latvian tourism business were interviewed from December 2015 till February 2017. Qualitative approach has been selected and data analyzed and interpreted by applying content analysis. The main findings identified that potential tourism employees have problems with management of challenges, openness to the changes, motivation, understanding of the customer needs and carrier building. The most demanded type of creativity in Latvian tourism is modification. Among different types of tourism enterprises the use of creativity is highly required in product and marketing departments.

Keywords: creativity, tourism, higher education, employability skills

The philosophical underpinnings of school health education

Inese Stars

University of Latvia, Doctoral study programme “Pedagogy”; Riga Stradiņš University, Department of Public Health and Epidemiology, Latvia
Inese.Stars@rsu.lv

Abstract

Identifying philosophical and theoretical orientations that inform school health education can increase understanding of and improve teaching approaches. Discipline without a philosophy lacks direction and clear focus, it loses *consensus on purpose*. Changes in health education philosophical orientations lead, in turn, to changes in the approaches to teaching and learning. Health education philosophical positions as a set of principles also guides professional action of school health education. *School health education, as well as adult health education, is operating under several different philosophical positions*. Understanding the major health education philosophical trends is extremely important. This article traces the underlying theoretical framework of school health education and reveals *the philosophical underpinnings of it*.

Aim: a theoretical study of scientific literature was done to identify and highlight some of the today’s most influential philosophical approaches in school health education.

Results: whereas the philosophical grounding of health education, also school health education, has long been debated, there is no consensus among researchers regarding the best or the most appropriate foundation for health education practice. It traditionally has focused on different philosophical approaches. School health education usually derives from more than one philosophical approach which, in turn, derives from an adult health education. For example, researchers present 5 philosophical positions in health education (cognitive – based; decision – making; behaviour change; freeing and functioning; social change) and propose a behaviourally focused, ecologically grounded, integrated school health education philosophy as more consistent with student’s needs, society interests and health educational goals. Other researcher insists that school health education is embedded in different educational paradigms: the rational paradigm (medicalized discourse of health); the social dialectic paradigm (concept of empowerment); ecological paradigm (relationships between persons and their environments). Some study states that there are at least 4 ideological health education models available (medical/preventive model; radical model; educational model; empowerment model) and school health education needs to rethink these models and its philosophical underpinnings in the light of child-centred education.

Conclusions: there is a constellation of philosophical trends that support theoretical and practical foundations of health education. School health education is guided by a number of different and diverse philosophical orientations. An analysis and critical examination of school health education philosophies is required to provide school health education practice with the most reasonable and supportable philosophical foundation, that would help guide it.

Keywords: philosophical, school, health education

Benefits of Having Time Management Skills and the Factors that Facilitate Their Development as Perceived by Students from the Polish-Belarusian Borderland

Alicja Korzeniecka – Bondar

alibon@uwb.edu.pl

Abstract

The contemporary society, referred to as information, network or knowledge society, but also the society of individuals, implicates a change of the way of preparing young people to their future roles in different (personal and professional) areas of life. Apart from the fragmentation of life, haste and the worship of the present, the contemporary culture is permeated with excess, surfeit, and overloading. This causes the multiplicity of options and difficulty making choices, it gives rise to impatience and new temporal requirements. The aim of the text is to present benefits of time management skills and factors facilitating their development as perceived by students from the Polish-Belarusian borderland.

The presented results are part of a larger, international research project¹ aimed to recognize the state of information competence, teamwork skills and the recognition of temporal perspective as perceived by students living at the borderland, and to find out the determinants of their development. The diagnostic poll method was used in the research, involving two techniques: self-evaluation scale concerning teamwork, information competence and the recognition of one's own temporal perspective, and a questionnaire to find out the determinants and benefits of their development. The research was carried out among 440 teacher students, at two universities located at the Polish-Belarusian borderland: University of Bialystok (Poland) and the Brest state University named after A. S. Pushkin (Belarus). The respondents represented different faculties (such as education or Polish studies, biology or chemistry). The research involved two stages. In the first part (in 2014), 199 Belarusian students took part. The second one (2015/2016) was a continuation of the study with 241 Polish students.

The vast majority of the participants declare that conscious planning of their lives is a benefit of skilful time management. A considerable part of each group can see that the skill helps them achieve goals that are important from the personal point of view and significant from the social one, save the resources they have (e.g., energy or money) and make life choices. Most of the participating young people identify factors facilitating the development of time management skills that are related to themselves: the awareness of their goals, the autonomy in planning their actions, having scheduling skills, and useful personal traits. Assistance and support from other people are perceived as less important.

Keywords: university, time management skills; Polish-Belarusian Borderland

¹ The research was performed by Alicja Korzeniecka-Bondar and Katarzyna Borawska-Kalbarczyk

Benefits of Having Teamwork Skills and the Factors that Facilitate Their Development as Perceived by Students from the Polish-Belarusian Borderland

Tolwińska Bożena

ztt@wp.pl

Abstract

The developing information society implicates the need to cope with the unique dynamics of changes in all areas of life. The development of contemporary organizations in accord with the learning organization model is the response to that. It is a challenge for educational institutions to display the characteristics of learning organizations too, and to move the stress in educational processes from providing students with knowledge to preparing them to obtain the knowledge autonomously, take innovative activities, and develop life management skills. To achieve these assumptions, teachers are necessary who attribute special value to activities taken in cooperation, without which it is impossible to accomplish many goals nowadays. Encouragement to collaborate is contradicted by attractive rewards such as ensuring a better market position in return for taking individual actions, which make an individual stand out. The aim of the text is to present benefits of teamwork skills and factors facilitating their development as perceived by students from the Polish-Belarusian borderland.

The presented results are part of a larger, international research project² aimed to recognize the state of information competence, teamwork skills and the recognition of temporal perspective as perceived by students living at the borderland, and to find out the determinants of their development. The diagnostic poll method was used in the research, involving two techniques: self-evaluation scale concerning teamwork, information competence and the recognition of one's own temporal perspective, and a questionnaire to find out the determinants and benefits of their development. The research was carried out among 440 teacher students, at two universities located at the Polish-Belarusian borderland: University of Białystok (Poland) and the Brest state University named after A. S. Pushkin (Belarus). The respondents represented different faculties (such as education or Polish studies, biology or chemistry). The research involved two stages. In the first part (in 2014), 199 Belarusian students took part. The second one (2015/2016) was a continuation of the study with 241 Polish students.

Most students in both groups can see multiple benefits resulting from having teamwork skills, but there are clear differences between the groups as regards the evaluation of each factor. The respondents tend to locate the possibility of developing those skills in internal (personality traits) rather than in external factors (e.g., training sessions).

Keywords: university, teamwork skills; Polish-Belarusian Borderland

² The research was performed by Alicja Korzeniecka-Bondar and Katarzyna Borawska-Kalbarczyk

Python programming language as a tool for integrating learning subjects in the implementation of the Robotics in Secondary Education

Sergey Bratarchuk¹

1 Riga Classical Gymnasium. LV 1035, Latvia, Riga, Purvciema st.-38, off. 123.

e-mail: sergey.bratarchuk@gmail.com

Abstract

In the system of modern education, focused on the development of interdisciplinary relations, it is important to use the search for the basis on which integration can be implemented. The emergence of such disciplines as Robotics in the STEM (Science, Technology, Engineering, Math) education requires careful study of all components of the curriculum - such as physics, computer science and others. At the same time, an important element is the search for such a technology, a cross-cutting theme or a competence that would help students create bridges between the disciplines studied. Being a practicing Teacher of Programming, Physics, Robotics, ICT and the Basics of Scientific Research, the author considers using the Python scripting language as a tool for delivering educational material in all the listed subjects. The results of this paper show practical steps to use this and other integration tools.

Keywords: Python programming language, Robotics and Automatics, STEM upper secondary curriculum

COMPERATIVE USABILITY EVALUATION OF TWO OPEN SOURCE LMSs FROM LEARNERS' PERSPECTIVE

Assoc. Prof. Dr. Hurşit Cem SALAR

hursitcs@gmail.com

Abstract

Learning Management Systems (LMS) are widely being used in higher education distance, blended or face-to-face modes. Although many of open source are shifting towards paid version, there are still free LMSs. The main problem of open source LMSs is in usability area. This research has focused on user satisfaction and ease of use in terms of human computer interaction rather than technical subjects. The main goal of this research is to comparatively evaluate two open source LMSs according to learner's' perspective. Researcher made use of his Information Technologies Course in faculty of education in Turkey to achieve this goal. Hereby research carry out information based upon real, long term data. The course demonstrates how IT can be used in educational purposes. Students learn to use WEB 2.0 tools like online presentation, infographic, wiki, production of educational videos etc. for one term including 14 weeks. Students also meets with Moodle at the first lesson to access learning materials, submit homeworks-studies and communicate each other. This semester, at the 7th week of the course, researcher continued to use another open source LMS (Waiting for permission to use of the name of LMS) in order students to comparatively evaluate two LMSs. At this point two questionnaires with five-scale Likert type, The SUS (System Usability Scale) and Usability and User Satisfaction Questionnaire will be used to collect data. Open source LMS accomplishes great jobs for educational institutions and they have a wide developer team and supporter. This research can provide information to remove faulting components predicted on the usability and real user satisfaction data. Also this research will have findings regarding attitudes of learners to LMSs.

Goal management & teacher competence development in schools

Anete Butkēviča Mg.sc.soc
butkevica.anete@gmail.com

Abstract

In organization studies a general consensus exist that specific, meaningful and formalized goals are a distinctive component of any organization (Scott, 2002³). Various research has pointed out that management of school goals is often characterized as a vague process, the goals tend to lack direction for concrete action. Furthermore, the main goals of a school should be linked to the development of human resources (i.e. teacher competence) and cooperative work among school members rather than just maintain formal positions and organizational infrastructure (Murphy et al 2001, p. 73⁴).

This paper seeks to investigate how the process of managing goals (formulation and attainment) is being carried out in Latvian schools. The investigation takes a qualitative approach to outline the perceptions and actions of the school management team. Empirical data was gathered by conducting face to face structured interviews with principals and middle management representatives (N=39) in ten schools from a large municipality in Latvia. The study included different types of schools: primary school, high school, evening school, dual language "stream" school. The interviews consisted of three main inquiry themes:

- school's purpose, existence, main functions;
- expectations from different stakeholders;
- professional learning support for teachers (in regards to the kind of support provided in the past, the kind of further learning needs identified and what would be the most effective approach to professional learning).

Interviews were held in schools in the period of January-March, 2013. Average length of an interview was 30 minutes. Aim of data analysis was to answer the following research questions:

- How does the school management team describe and interpret the main goals of their school?
- How is teacher professional learning managed?
- How does the setting and attainment of goals relate to teacher professional learning and overall competence development?

Analysis of the interviews give a first-hand insight of the current situation of school management capacity to carry out goal management in relation to teacher competence development. The paper seeks to discuss the theoretical and practical importance of specificity of school goals, meaningful direction of actions towards them and the possible ways of aligning goals with teacher competence development.

Keywords: school management, goals, teacher competence development, organization studies

³Scott, W. R. (2003). Organizations: Rational, Natural, and open Systems. [5th Ed.]. Pearson Education, Inc.

⁴ Murphy, J. (2001). The productive high school: Creating personalized academic communities. Corwin Press.

Students civic education and competencies for the active engagement in the modern European democracy

Olga Pole

University of Latvia,
Faculty of Education, Psychology and Art
Institute of Educational Research
Jurmālas avenue 76, Riga, LV – 1086
e-mail: olga.pole@lu.lv

Abstract:

This article addresses the competences needed for the students' active engagement in the modern European democracy. The aim of the study was to analyze the content of the civic and citizenship education and to define the competences needed for the students' active engagement in the modern European democracy. In order to achieve the aim there were applied both theoretical and empirical methods (analysis of theoretical literature and educational documents as well as the data of the comparative research program of the International Association for the Evaluation of Educational Achievement (IEA) International Civic and Citizenship Education Study (ICCS). The empirical study included the analysis of ICCS questionnaires' as well as the student test of 8 grade students of Latvia. Representative sample size N=2602.

The results revealed that there can't be defined a one set of competences, that are needed for students in order to become an active citizens, moreover, a variety of competencies and personal features are needed in order to adapt to the changing concept of democracy itself (particularly the European democracy) and in order to be able to engage in it. Educational documents of Latvia provides a good base for the development of these competences, but the ICCS results shows, that there still is a room to improve.

Keywords: student competence; citizenship; civic and citizenship education; International Civic and Citizenship Education Study, democracy.

Developing confident computational thinking through teacher twinning online

Elizabeth Oldham, Pamela Cowan, Richard Millwood, Glenn Strong, Nina Bresnihan, Mags Amond, and Lisa Hegarty

Corresponding author: Elizabeth Oldham (eoldham@tcd.ie)

Abstract

Attention is currently focused on the development of Computational Thinking (Wing 2006), not only through Computer Science / Computing courses, but across the whole of the school curriculum. This means that there are opportunities for innovative professional development, so that teachers can identify Computational Thinking elements in their subject areas and help their students to develop the requisite skills. The authors believe that such development should begin by promoting teachers' confidence.

In the CTwins ('Coding Twins' or 'Computational Thinking Wins') project, a playful and supportive introduction to computer programming was provided, using the jigsaw block-based language Scratch. It aimed to equip teachers with the confidence and skills to develop Computational Thinking through learning to programme in pairs called 'twins'. After meeting at a launch event to establish relationships and trust, each pair agreed to produce a creative piece, such as an artwork or a subject-specific game, taking turns at contributing to the final product. The twins were purposely chosen to be geographically and educationally-culturally distant from one another by twinning people from different countries (in this case Northern Ireland and the Republic of Ireland). They were required to communicate and reflect in an online community, thus ensuring that the processes involved in programming in pairs were recorded. The theoretical framework underpinning the design of the project draws on research indicating that paired programming increases novice programmers' confidence over time and has positive effects on their performance; it relies also on the established benefits of working in online communities, while the cross-national element was intended to promote creative thinking by "making the familiar strange."

An evaluative action research approach in two cycles was undertaken. Each cycle used mixed methods data collection including two pre- and post-surveys, a focus group and postings from the online community. The first survey measured confidence in programming and the second 'grit'. An exhibition of the products at the end of each cycle was the occasion for the focus groups, providing joint reflection and evaluation. Analysis reveals some rise in participants' confidence by the end of their cycle, and also indicated levels of grit that suggested participants were likely to persevere with programming. Posts in the online community were analysed to triangulate the survey results.

This paper describes the implementation of the CTwins strategy, presents the findings and discusses the implications for further work in a wider European context.

Keywords: Computational Thinking; confidence; programming in pairs; online community; Scratch.

Role of the Principal of Financial Education Management

Linda Mihno

linda.mihno@lu.lv

Agnese Kozlovska

agnese.kozlovska@lu.lv

Abstract

Principals' role in last decades have been changed. Principal is no longer just school administrator who carry out only certain administrative functions. Nowadays principal duties also are, for example, human resource planning, regulation enforcement, setting the school aim, the school curriculum planning, teaching, classroom observation studies, the evaluation of students, teachers' mentoring, teacher encouragement for professional development and the development of their professional development plan.

Financial education becomes increasingly important, along with the development of ICT, develop financial services and opportunities too. In the context of change of financial education is important to recognize the role of principal to understand what we can expect from the principal in this process. Aware of the principals' role is important because unlike we probably asking from the principals things that are not within their competence.

The main problem - the financial environment rapid development and the great financial crisis encourages the promotion of financial education development, emphasizing the need to include it in the school curriculum. Therefore, it is important to be aware of the role of principal in financial education development.

To understand the role of principal, has been performed analysis of the literature and was analysed OECD PISA 2012 principal survey data about financial education. In OECD PISA 2012 participated 211 school principals from Latvia. The survey included questions about the school, its organizational processes, curriculums, educational process implementation, including the financial education.

The principals' role in financial education is very important. Considering that the school principal have the choice at school to teach or not to teach financial education, principal is responsible for ensuring that students gain the financial education and in what quality. The principal is responsible for financial education implementing and maintaining at the school. Depending on the quality of implementation and whether the general financial education is implemented depends on the students' financial literacy.

Keywords: financial education, principals' role, OECD PISA.

The understanding of the learning sense by students and seniors nowadays

Martins Veide

Latvijas Universitāte, Jūrmalas gatve 74/76, martinsw@inbox.lv

Abstract

Taking into account that nowadays the focus in humanistic pedagogy is placed on the personal significance of the learning process and that the personal motivation to learn is closely linked to the comprehension of learning sense, the main aim of the article is to clarify the perceptions of Latvian students and seniors on the sense of learning. In order to get a better insight in students' and seniors' understanding of learning sense in today's situation, a survey with questions and incomplete sentences was created. 135 students from four institutions of higher education and 178 seniors with and without higher education from 7 boarding houses and society houses were surveyed.

Keywords: sense of learning, students, seniors, personal understanding, experience

“I, Robot” – Asimov’s vision of robots and robotics between science, science teaching and science fiction

Milan D. Stojkovic

Evangelical Secondary School, Hochkirch, Germany
agricola77@gmail.com

Abstract

The creation of a “*man-machine*” or mechanical body modeled according to the human body dates from the dawn of the first civilizations. Back to the Antique times, there originated the idea of construction of mechanical devices: the machine, tools and weapons, on the model body parts of animals and humans. Certainly, they were not just a reflection of human desire, descending from the world of mythology, imagination and fantasy, but also a need to know better the world around, as well as use natural forces to their advantage or creation of artificial life.

During the Renaissance, this idea become popular again, it was reviewed and further developed. Primarily, it was not reflected only in literary fantastical character, but in science, technology and technical work of Renaissance scholars as well. Such as one scientific and technological visionary, Leonardo da Vinci (1452-1519) and his constructors of military, flying machines, vehicles as well as “mechanical men or knight”, an ancestor of robotic machines of our time.

New age discoveries in the natural sciences have influenced further development of pre-robotics and influenced the creation of one of the first modern scientific SF literary works, Mary Shelly`s (1797-1851) “*Frankenstein*” (1816). In the mid-20th century, the Czech SF writer Karel Capek (1890-1938) introduces the concept of Robot (Old Church Slavonic word: *rabota*, which means servitude of forced labor), while biochemist, popularizer of science, an American SF writer Isaac Asimov (born Soviet-Russian; 1920-1992) formed and developed the concept of robotics and its three basic laws.

First of all, this work will consider the possibility of implementing ideas of robots and robotics from the modern SF literature in the teaching of natural sciences. In addition, this paper will present, analyze and compare the curriculum - teaching topics “Bionics” in the field of MNT (Men, Nature, Technique; 7 gr. in Thuringia) and “Robotics” in teaching of Physics (VIII gr.) in secondary schools in Germany (Saxony) as well as in Physics in the primary (6 to 8 gr.) and secondary schools in Serbia (1 to I4 gr.).

The main goal of this paper is to present, with the help of specific examples from the science curricula, the implementation and processing of teaching contents from robotics according of ideas from SF literature within the contents of teaching science and technology (STEM).

In general, the application of robotics contents that derived from modern SF literature, does not only aim at popularization of natural science, and could have significant educational character in teaching science. In addition, increasing and rapid progress in the field of informatics reflects in technological and economic development of global human society; therefore, there is a great need for further development, introduction of new ideas, its broader and deeper processing, as well as integration of educational contents of robotics in the field of natural sciences.

Keywords: science fiction, robots, robotics, science, science teaching

Semantics evolution of e-learning system

AAMMOU Souhaib

Abdelmalek Essaadi University, Ecole Normale Supérieure (MOROCCO)

JDIDOU Youssef

Abdelmalek Essaadi University, Faculty of Sciences (MOROCCO)

EL BAKKARI Kaoutar

University of Cadiz (SPAIN)

Abstract

Context

The new generation of the Web, the Semantic Web, presents itself as a promising technology of e-learning systems development.

Using ontologies, the Semantic Web become an environment which facilitates the interoperability from heterogeneous systems and distributed as well as the sharing and communication of knowledge available in the community.

Objectives

Our research is integrated in a project that aims to develop an application that allows the specification of knowledge objects which support the learners to achieve a certain level of competence.

- All these elements are characterized semantically, being referenced by entities of ontology.
- Develop ontological model that ensures interoperability with heterogeneous e-learning system

Methodology

Semantic interoperability

In our context, semantic interoperability thus denotes the study of how to bridge differences between information systems on two levels:

- on an access level, where system and organizational boundaries have to be crossed by creating standardized interfaces that sharing of internal system services in a loosely-coupled way.
- on a meaning level, where agreements about transported data have to be made in order to permit their correct interpretation.

Evolution of the ontology

We define the evolution of the ontology as the process of change in the previous version of the ontology in a new version, while preserving the roles of this ontology. In our context of research, the prime aim of using the ontology is ensuring the aggregation semantics of a system for the knowledge management.

Ensure the semantic aggregation in our system, raises complex questions from the point of view of the evolution of the ontology used as Semantic Repository:

Question 1: How to facilitate the discussion of distributed tutors to allow them the consensus decision of the changes to the ontology?

Question 2: How to facilitate the specification of the changes to the ontology in a complete manner but user-friendly?

Result : Ontologies model

To define the model of the ontology of our system, it designs the model under the Protégé software 4.0.1. Protégé is free software, open source, which allows to build ontology for a given area and to acquire data in the form of instances of this ontology.

Domain ontologies represent the semantics of concepts in a domain in terms of classes and properties. A class also called a concept, groups and abstracts objects of the domain with common characteristics.

Keywords : Semantic web, ontology, e-learning system

Learner Modeling for Micro Learning in MOOC

HISSI Ouafaa

Abdelmalek Essaadi University, Ecole Normale Supérieure (MOROCCO)

JDIDOU Youssef

Abdelmalek Essaadi University, Faculty of Sciences (MOROCCO)

AAMMOU Souhaib

Abdelmalek Essaadi University, Ecole Normale Supérieure (MOROCCO)

Abstract

The explosive growth of learning resources leads to a revolution of education and learning. Educational professionals have strived to explore the MOOC format as a regular pedagogical approach. Most learners who enrolled in MOOC courses ended up dropping out. As research and development of MOOC are still in infancy, there are evidently many opportunities to improve MOOC courses as well as their affiliations, such as learning platforms and learning support services, to enable easier access and better experience for both providers and learners.

In this paper we particularly concentrate on delivering learners learning resources in small chunks that can be learnt in relatively short duration, and modeling the learner and learning context in an extensible manner with respect to the micro learning environment.

In literature, “micro learning” processes cover a time span from few seconds to up to 15 min or more. Another definition of micro learning is Web focused: ‘micro learning refers to short-term learning activities on small learning units. In the contemporary mobile/web society, micro learning pertains to small pieces of knowledge based on web resources’ [Kovachev, D. et al., 2011]

Micro learning resources can be made available on-demand to facilitate just-in-time learning. These small learning bytes not only aid quick assimilation but also make it possible to learn on the go, thus reducing the dependency on a fixed time slot or the need to take a large chunk of time out of one’s working day. It is a key technology to ensure adaptive learning of personalized learner model in terms of retention of propositional content.

a personalized learner model for micro MOOC learning can be established by using these screened and sorted data, according to their historical and real-time data. This is the aim of the Learner Modeling. The learner model consists of two domains of factors (i.e. internal and external). In this research we try to determinate the all factors that influence the developing of learning activities.

Keywords: MOOC, Learner model, Micro learning

A Connectivist Approach to design MOOC activities

EL BAKKARI Kaoutar
University of Cadiz (SPAIN)

AAMMOU Souhaib
Abdelmalek Essaadi University, Ecole Normale Supérieure (MOROCCO)

JDIDOU Youssef
Abdelmalek Essaadi University, Faculty of Sciences (MOROCCO)

Abstract

Since a few years, university education use, more and more, the educational support offered by the digital platforms. Beyond the aspect of "media", emerges a new pedagogy, which comes either, so hybrid, strengthen, complement or revitalize a teaching classroom, whether to substitute, in the framework of a distance education. The Behavioral design of teaching, in a classic report Master-student, teacher-learner, oriented toward the prediction and control of the behavior of the individual learner, and based on logical diagrams putting in relation stimuli and reactions, can it still be the actuality?

Jean Piaget, the first, has shown the limits of such design, insisting on the need, in any educational approach, to take into account the progressive adaptation of the learner, in a constructivist vision where the individual, free of any packaging, and in a process of reconstruction at the origin of its knowledge base and appropriates the world that surrounds it.

But it is only with the emergence of the connectivism developed by George Siemens and Stephen Downes, refined version of neo-constructivism of Lev Vygotski, and more successful than the theory of the social learning of Albert Bandura, where the essential part of the acquisition of knowledge is acquired by a phenomenon of the order of social mimicry, that the specificities of the digital world, and their influence on the learning, are truly taken into account. The Connectivism, theory of learning with whole share, the apprehends through the image of a network composed of nodes - the information received by the learner, his reactions, etc ..., connected between them by connections - interactions neuronal (cognitive, conceptual, social, ...), which are the key to access to knowledge.

In analysis perspective, our study, which is interested in the various aspects involved in the framework of computer environments for human learning, will follow the following procedure:

- In a first time, we placing in a recent historical perspective, we focus on the aspect of "initial training", i.e. the provision, for the learner, a knowledge base, courses and worked examples, via the tools of type SPOC or MOOC, and then analyze the results currently available on these tools; in particular, we will show the share behavioral, or connectivist, inherent to some of these tools.
- We will then examine the need to put in place of the custom path, adapted to the individual progress of each learner.

Keywords: MOOC, Connectivist Approach, Adaptive Learning

Analyzing Reflections- Detecting Min-Max Points in the Practice Function

Batya Amit

batya.amit@levinsky.ac.il

Abstract

This study presents the development and application of contemporary tools designed for pre-service mathematics teachers, focusing on the pedagogy of Reflective Diaries. The aim is to promote the understanding of the practicum process and empower pedagogic supervisor. Similar to the crucial knowledge regarding student's (at school) significant issues a teacher is required to apply when planning the lesson- the college pedagogic supervisor is required to lead a control process based on the issues that promote or hinder the Pre-Service Teachers' Teaching process. The reflective diaries are developed as a double facet tool: Developing critical thinking and exposing current issues.

The impact is exposed on a regular basis by the students to the students allowing mutual fertilization and support.

Results point out that the pedagogy fosters the content knowledge as well as the pedagogical content knowledge (PCK) of pre-service teachers and helps in analyzing the effect of different theories through actual classroom observations preparing lessons, teaching and reflecting upon them. To this effect applying the tool plays an important role to facilitate the process and to support the development of student teachers, in order to maximize their professional gain from the practicum.

Examples, results and insights will be presented at the conference.

Keywords: mathematics, pedagogical coaching, practicum, pre-service, Reflective Diaries.

Transformational Learning Experiences at the Core of Teacher Continuing Professional Development

Liva Goba, PhD student, Mg.paed.

liva.goba@gmail.com

Abstract

Contemporary schooling is facing both long term global challenges as globalization, migration, increasing diversity, digitalization and technologic enhancement, as well as contesting views on quality teaching. The contemporary teacher is expected to transcend the traditional role of learning facilitator and also become an inspiring leader, role model, mentor, connector, researcher, curriculum developer and so on. It is argued in this study that teacher continuing professional development (CPD) should draw on the approach of support and agency building and provide teachers with varied learning experiences that encourage transformative learning, discovery and building of more inclusive meaning perspectives.

This study explores diverse research traditions that tackle the concept of perspective transformation and the consequent views on learning experiences that have the potentiality to improve teachers' professional practice.

Keywords: Transformational learning experiences, meaning perspectives, teacher CPD

Digilanguages - Language learning in a digital world

Dr Éamon Ó Cofaigh,

School of Languages, Literatures, and Cultures (French), National University of Ireland, Galway.
eamon.ocofaigh@nuigalway.ie

Abstract

Enhancing Digital Literacies for Language Teaching and Learning is a project funded by Ireland's National Forum for the Enhancement of Teaching & Learning. The project aim is to develop a national framework of digital literacies for language learning and teaching in an Irish higher education context.

The cross-institutional project team comprises language lecturers from across a range of geographically diverse locations, representing six HE institutions (University of Limerick, National University of Ireland, Galway, Dublin City University, Mary Immaculate College, Limerick, Dublin Institute of Technology, and Limerick Institute of Technology). The languages emphasis for the project extends to French, Italian, German, Spanish, Irish and English for Speakers of Other Languages.

The urgent need to address the national language skills' shortage has been highlighted in numerous arenas. In the context of the need for a continued economic recovery, language skills and proficiency are essential. Against this backdrop, and the need for more flexible support to language learners during various transition periods, the Digilanguages project aims to develop a digital interactive resource centre for languages. It will be of use as a significant student support mechanism, and also as an online learning tool for a number of different purposes. Within the scope of this project the target groups include higher education (HE) first year students, study abroad students, and language teachers, with resources also being of interest and benefit to others.

The proposed poster will display examples of the project's interactive resources which have been identified as key areas where online flexible support is best focused. It will also further discuss the aim of the project, which is to develop online resources and activities in three broad areas:

1. Digital Literacies for Language Development: for example, privacy, copyright, register, online communities, netiquette, online identity, boundaries, plagiarism. This will work within the National Framework for Digital Skills being developed by the All Aboard Project
2. Language Learning Strategies and Practices: for example, oral and other skills, intercultural competence, lexis and grammar, register and domains of use, use of digital resources including CALL resources
3. Transitions to Third Level Language Learning Environments: for example, expectations, autonomy, self-directed learning, resilience, motivation, time management, confidence, affective issues. The portal will be freely available and scalable for use in other contexts. The contents and activities will afford integration into many programmes currently on offer in HE.

Keywords: Digital literacies; national framework; higher education; language learning; language teaching.

Digital Literacy: How do learners perceive and evaluate their digital skills?

Miroslava Černochová, Hana Voňková, Jiří Štípek, Jan Hrabák,
miroslava.cernochova@pedf.cuni.cz

Abstract:

In today's global job market, young people are required to be proficient in digital literacy in order to compete. However, research suggests that young people are not considered to be functional in our digital society and ready for the 90% of jobs that, in the near future, are expected to require ICT skills of some level (S. Kluzer, 2015, p. 3). There are a number of ways to measure levels of digital literacy achievement: a certificated exam (e.g. ECDL), a university diploma (e.g. in computer science, IT), digital products (e-portfolio), on-line tests with practical tasks in IT (task-based assessment) or (on-line) self-assessment questionnaires in which respondents are asked to assess their own digital skills and knowledge and to grade how well they perform representative skills or tasks which, in turn, enable data to be gathered, based either on people's own perceptions or estimations of their computer skills.

In 2017, the authors began a nationally-funded, research project, GA ČR 17-02993S, "Factors influencing the ICT skills' self-assessment of upper-secondary school students" with the aim of identifying key factors that influence how young people perceive their digital literacy and knowledge. Self-assessment of digital literacy is commonly used in educational research and in real-life situations (K. de Wit et al., 2014). Their main advantage is their low cost in terms of time and expenditure. However, self-assessments may depend not only on the objective situation (actual digital skills) but also on the reporting style; it can bring about misleading conclusions about the actual digital literacy of respondents. The authors would like to design a research tool based on the anchoring vignette method and 'over-claiming technique', which will enable the identification of which factors of (self-)assessments lead to incomparability (mismatch) and which make self-assessments comparable (match). The concept of digital literacy as specified by DIGCOMP 2.0 (R. Vuorikari et al., 2016) is used as the basis for research tasks applied in a survey involving around 2600 upper-secondary school students from the Czech Republic. Data collected in the research will identify which factors (economic, cultural, social, and personal) appear to influence respondents' self-assessment of their digital skills.

Keywords: method of anchoring vignette, digital literacy, self-assessment, factor

Folklore as a source of folk pedagogy

Darja Grehova

University of Latvia

Faculty of Education, Psychology and Art

Jurmalas gatve 76, Riga, LV-1083

E-mail: da6ko@inbox.lv

Abstract

The study of a nation's pedagogy, upbringing and educational traditions is particularly important, because there lies the wisdom of such nation; accumulated for centuries and characterizing the foundations of people's lives which remain presently relevant. It is considered to be very important that the latest generation is aware of the culture of the country, traditions and customs, because the knowledge, opinion, and values that people pass on to following generations directly affect the development of each person's identity. One of the ways how to pass it on is to use one of the sources of folk pedagogy that preserves the complexity of upbringing experience and pedagogical knowledge – folklore. The actualization and use of folklore heritage can help modern people solve their various problems and is also necessary for younger generations in their self-development process, because this experience and these traditions found in folklore have been tested by years.