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Learning Innovations and Quality:

"The Future of Digital Resources"

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Information about LINQ 2013 online: <http://www.learning-innovations.eu>.

Information about the University of Duisburg-Essen online: <http://www.wip.uni-due.de>.

Table of Content

Learning Innovation, Learning Quality and the Future of Digital Resources - An Introduction

Learning Innovations and Learning Quality are the two main objectives to foster improvements in learning, education and training and the two core ingredients for learning success and impact. They are focused by many different theories and diverse practices. And they are more and more required due the increasing speed of globalization and changes in communities, economies, technologies and societies worldwide.

This book demonstrates the need for combining learning innovations and learning quality from various perspectives: The scientific articles address the different ways of formal, non-formal and informal learning and all the educational sectors from kindergarten, school, and university to lifelong learning.

Particular emphasis is put on the current opportunities provided by digital resources: How can we benefit from their potential and increase their (open) access and re-usage in learning, education and training?

Thus, the book contributes to the current debate on opening up education towards new and innovative learning practices and online communities:
To integrate learning innovations and learning quality into a holistic and sustainable vision and approach for modernizing learning, education and training in our society.

The presented articles are the result of the Open Call for Papers issued by the European and international Conference LINQ 2013:
LINQ is the leading International conference focusing Learning Innovations and Quality (LINQ) and addressing in particular Digital Resources and Online Repositories, Technology-Enhanced Learning for Schools, Universities and Lifelong Learning, as well as Innovations and Future Trends in Learning, Education and Training (LET). LINQ is organized by the University of Duisburg-Essen, Germany, and its Institute for Technology-Enhanced Learning and Innovations for Didactics and Quality (TELIT).

The motto of the LINQ conference 2013 was: "Innovation and Quality: The Future of Digital Resources". LINQ 2013 took place in the Global Headquarters of the United Nations' Food and Agriculture Organization (FAO) in Rome, Italy, on 16th and 17th of May 2013.

LINQ 2013 conitnued the exploration of the relation between learning innovations and learning quality: Often treated as contradictions, LINQ 2012 was focusing their common grounds and synergies for the first time. The LINQ conference opened the debate on the relationship of learning innovations and quality and facilitated the exchange of ideas between involved individuals and organizations in many diverse ways: LINQ 2012 was bringing together experts, policy developers and practicioners from four continents for a lively and productive meeting and debate.

The scientific articles published in this book are the selected papers of applicants from over 30 countries received upon the Open Call for Papers issued by the International Conference LINQ 2013: They were reviewed by the scientific Programme Committee of LINQ 2013 in double-blind peer reviews and selected according the review results. In addition all authors of the selected articles could present and discuss their papers at the LINQ conference in a speech.

In the introductory article **Christian M. Stracke** (Germany) presents the concept of Open Learning for the modernization of learning, education and training. Open Learning aims at the right balance between learning innovation and quality for modernizing school education and lifelong learning. Learning innovation and learning quality are very often addressed separately and solely. But in fact they are interdependent and have to be reflected both for achieving the best learning quality and for fitting to the given situation. Open Learning provides a theoretical and generic framework for such a balanced long-term and sustainable improvement across all sectors in learning, education and training, communities, educational and training systems and societies in Europe and worldwide.

Antonia Stefani, Achilles Kameas (both from Greece) present and discuss a life-cycle model for the quality evaluation of digital educational content suitable for open and distance learning. This model, being the first step for designing a Quality standard, utilizes elements from project and product life-cycles as defined in formal Management procedures. The result is a mixed, multi-step educational-focused process, which covers all aspects of content life: from inception, to design and production, use (and re-use) to evaluation and improvement.

Alexey Abramov, Maria Bulakina, Alexander Ivannikov, Alexey Sigalov (all from Russia) presents results of an educational internet project aimed at integration of open educational resources of Russian universities and other educational institutions. The authors focus on conceptual aspects of the project, the software

functionality, the informational components, the structure of metadata, the questions of content management including the approach for resources collecting and evaluating.

Premysl Velek and **Victor J. Perez Rubio** (both from Belgium) presents and compares two ways to stimulate sharing and exchange of online educational resources across different languages and educational settings: the Travel Well criteria for learning materials and the Scientix Translation on demand service. Special attention is paid to the general features of online resources in science and maths education and their practical implications for their successful re-use in various contexts.

Thomas Richter (Germany) invites discussion about Open Educational Resources (OERs). In his paper, contextual appropriateness is investigated as a special quality criterion for OERs. The author introduces barriers against the use of OERs and demands from the educational community that need to be addressed in order to overcome such barriers. The paper shows that the hitherto implemented quality standards for Technology Enhanced Learning do not yet fully support such particular demands and discuss which additional steps are required for the context of OERs.

David Martin-Moncunill (Spain), **Salvador Sánchez Alonso** (Spain), **Paulo A. Gaona García** (Colombia) and **Nikolaos Marianos** (Greece) share their experience with educational digital repositories as educational tools. The authors state, educational digital repositories have been trying to implement and integrate interfaces using this kind of visualization techniques, with their knowledge classification schemes, trying to achieve similar results. Unfortunately, current interfaces show a number of problems related to usability that result in a lack of user interest. The paper explores the fundamental reasons for this problem at the light of the results of several usability studies carried out in the context of two European projects, where two different digital repositories are begin developed.

Pierangela Diadori and **Diana Peppoloni** (both from Italy) describe processes by the CLODIS project that aims at creating a network of digital resources based on a corpus of video recordings of classroom interaction in Italian as a foreign language to train student teachers of Italian as a second language. Future actions for further development of CLODIS are also described in the paper.

Helge Fischer, Thomas Köhler, Kathrin Möbius, Matthias Heinz and **Maria Müller** (all from Germany) discuss the status quo and perspectives of digital further education at the universities of Saxony (Germany). They present results of a state-wide internet analysis as well as projects of an ESF program, with the main objective to promote the use of media in the academic training.

María Jesús García García, Carmen Ruizazcarate-Varela and **José-Luis Casado-Sánchez** (all from Spain) provide the results of their desktop research in Generic Competence Assessment for improving the quality of teaching and learning within the current European Higher Education Area (EHEA). The authors review the current research on assessment of generic competences, especially through online tools.

Patricia Wastiau (Belgium) demonstrates main findings of the Survey of Schools: ICT in education, findings based on a high number of answers from various target groups in primary, lower and upper secondary schools randomly sampled. The paper details the analytical framework designed and the survey methodology implemented.

Alan Bruce (Ireland) presents an innovative international framework, the FIESTA (Facilitating Inclusive Education and Supporting the Transition Agenda) network focusing on achieving effective transition through collaborative working for children with special educational needs. FIESTA develops multi-disciplinary ways of working and teaching to enhance inclusion based on the child's educational, health and social needs.

Orazio Miglino (Italy), **Raffaele Di Fuccio** (Italy)**, Mario Barajas** (Spain), **Marlen Belafi** (Germany), **Ceccarani Partrizia** (Italy), **Dimitra Dimitrakopoulou** (Greece), **Carlo Ricci** (Italy), **Anna Trifonova** (Spain) and **Anna Zoakou** (Greece) present in their paper results and experiences, in the framework of Block-Magic an EU funded international research project. The authors introduce the general theme of developing and using innovative teaching/learning environments based on the harmonic integration of Embodiment Cognition theoretical perspective; recovering well known and traditional psycho-pedagogical practices; using Smart Technologies; developing Adaptive Tutoring Systems in order to support learners and teachers (or parents) actions.

Sjoerd de Vries and **Wouter Vollenbroek** (both from the Netherlands) describe Education21 research project (Onderwijs21), focusing in their paper on the Professional Development School Network approach. This network consists of

primary schools, secondary schools, teacher education institutes and education professionals.

Liisa Kairisto-Mertanen and **Harri Lappalainen** (both from Finland) introduce the innovation competences set as an aim for innovation pedagogy and show some examples of how these competencies can be reached and measured. The core of Innovation Pedagogy lies in emphasizing interactive dialogue between the educational organizations, students and surrounding working life.

Gulnara Sarsenbayeva (Kazakhstan) demonstrates current trends of development of quality issues in higher education focussing on the situation in Kazakhstan. She highlights the benefits and contributions by international standardization to educational strategies in Kazakhstan higher educational institutions to develop its quality assurance and develop change management system in order to know how to coup with reforms. Current educational standards, so the author, have to be replaced by national quality standards.

Evaluation results of the training provided by the project "Early Change: Promoting the professional development of early educators" are presented by **Vasilis Grammatikopoulos, Athanasios Gregoriadis** and **Evridiki Zachopoulou** (all from Greece). The evaluation of the training program was based on the adoption of a mixed method design.

Vasilis Grammatikopoulos, Athanasios Gregoriadis, Vasiliki Natsi and **Konstantina Klapsinou** (all from Greece) presents a desk research to examine the factor structure of the Dutch version of the Student-Teacher Relationship Scale (STRS) in the Greek educational context. The STRS is a widely used instrument that examines the relationships between students and teachers.

The relevance of e-competences for eJob profiles is addressed by **Ioanna Kaloudi** and **Achilles Kameas** (both from Greece). The authors present an ontology that they developed to use for storage of eJob profiles based on the European eCompetence Framework (e-CF). The authors outline the methodology they used, and present the ontology itself, together with instance job profiles. The use of the ontology with the help of competence queries has been demonstrated.

Finally 59 European projects are briefly presented in this book. All 59 projects were selected upon receipt contributions following an Open Call for European Projects that was issued in cooperation with the European Commission and its European Agency EACEA responsible for the management of European projects

from the Lifelong Learning Programme. The projects were selected and approved by the scientific Conference Committee of LINQ 2013. The projects address in particular following six topics: "Quality Management: Evaluation, Standards and Certification"; "Vocational Education and Training, New Skills and Quality"; "Open Access and Open Educational Resources: Policies, Tools and Content"; "Teachers in Focus: Competence and Skill Development; New Knowledge Networks - Innovation and Ideas Management for Lifelong Learning"; "Innovation in Technology Enhanced Learning: Languages, Inclusion, New Learning Forms".

Every project description starts with the logo, name and acronym of the project. Then, the information about aims, objectives and main target groups of the project are given. Furthermore, the project description provides an answer on the question how every project contributes to learning innovations and learning quality. After that, the projects' main outcomes are presented. All project representatives have been asked to give a short quote on the question what is most important for learning innovations and quality today and could present their project at the LINQ conference in a short speech. For more information about every project can be find online - links to project websites are provided on the bottom of every project page.

To summarize, Learning Innovations and Learning Quality are crucial for learning processes and success: That is also discovered, addressed and reflected by many European policies and communications by the European Union, European Commission, European Parliament, as well as by the European, national and regional public authorities, experts and communities.
This book contributes to the current developments and debate on learning innovations and learning quality by offering different views and solutions with particular emphasis on digital resources and by giving suggestions for future improvements of learning opportunities and European educational and training systems in all sectors and levels from kindergarten and K-12 schools, vocational education and training, higher education up to adult and lifelong learning. Thus, it provides a basis for further discussions about improvements and current developments in the field of learning innovations and learning quality.

For the best learning innovations and learning quality in Europe!

Christian M. Stracke and Tatiana Shamarina-Heidenreich

Open Learning: The Concept for Modernizing School Education and Lifelong Learning through the Combination of Learning Innovations and Quality

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Abstract: Learning innovation and learning quality are very often addressed separately and solely. But in fact they are interdependent and have to be reflected both for achieving the best learning quality: This article discusses how to achieve the best appropriate learning quality as the core objective in learning, education and training by combining the three dimensions learning history, learning innovations and learning standards. Only their mix can ensure to meet the learners' needs and to provide the best and appropriate learning opportunities and learning quality: The Open Learning Concept is presented as combination of suitable open learning styles and open learning scenarios and adapted for school education and lifelong learning in the world of work. Open Learning aims at the right balance between learning innovation and quality for modernizing school education and lifelong learning fitting to the given situation and for a long-term and sustainable improvement across all sectors in learning, education and training, all communities, educational and training systems and societies in Europe and worldwide.

Keywords: Open Learning, quality, innovations, learning history, quality development, school education, lifelong learning, digital age

Open Learning is the theoretical and generic framework and long-term vision for the modernization of Learning, Education and Training (LET) and for the required changes in all educational sectors, from kindergarten to lifelong learning. Open Learning combines learning innovations and learning quality to achieve a balanced and appropriate solution adapted to the given learning objectives, needs and situations. In this article, Open Learning will be introduced in general and applied for school education and lifelong learning.

Learning innovations and learning quality are important and reflected topics for a very long time from the beginning of discussions and theories about learning processes: In Europe, Plato's Allegory of the Cave is one of the earliest examples. Their debate continued during the introduction of the first universities in the Middle Age and of the school systems in the 18th century. During the last years and the upcoming so called "digital age", many discussions took place (also in the fields of school and higher education, learning for work and at workplaces as well as non-formal and informal learning) due to the two main changes covering all sectors, branches and levels of the society:

1. Globalisation and

2. worldwide internet establishment

These two factors are leading to global markets, worldwide networking, communication and competition, as well as to the digitalisation of services and systems with the introduction of internet-based services, hardware and software within all parts of our lifes. They were and are still changing all societies and in particular the learning, education and training in schools, universities, at work and online.

The European Union has identified the challenges and opportunities by these global changes and published several communications and framework for the future European society and its learning, education and training: Based on the Lisbon Declaration, the former vision of the Information Society called i2020 and the established Bologna Process (European Commission 2005), the European Commission and Council have have reviewed and analysed the impact of the globalisation, the internet and the information technologies in general leading to current new communications and policies: The Digital Age for Europe, EUROPE 2020 and Education and Training 2020 are reflecting these movements with speial emphasis on the potentials for the European citizens and communities (European Commission 2010a and 2010b, European Council 2009). Most recently the European Commission launched the communication on Opening Up Education for supporting the introduction and use of Technology-Enhanced Learning (TEL) and Open Educational Resources (OER) as well as the Grand Coalition initiative for competences and skills development through lifelong learning related to the world of work and all citizens in the European societies.

In the international discussions about the future learning, education and training from theory, research and politics but also from press, individuals and social communities, the main focus is currently on the technological innovations and their opportunities. That is valid for learning opportunities and in particular for learning at work and online. Theories and experts are claiming brand new and extraordinary chances, sometimes promising new learning eras and paradigmas:

E. g., the theories of connectivism by Siemens (2005) or of Social Learning by Hart (2011). Even the arrival of fundamental new ways of learning are promised under the label of learning 2.0 / 3.0 in analogy to the terms web 2.0 / 3.0 (Downes 2005, Karrer 2007, and for an overview Redecker 2009). Finally new concepts and descriptions of our world as a 'flat world' are leading to predictions that 'to learn how to learn' will become the most important asset for all workers due to all the changes and faster innovation (Friedman 2006): It is claimed to be a new movement and progress however it is clear and evident in pedagogy since several hundreds of years (if not longer) that 'to learn how to learn' is most important for learning processes and progress and for the development of personality and competences (Dewey 1966, Piaget 1953, Rousseau 1968, Vygotsky 1988).

From this perspective, it seems that learning innovations are the only path and road map for a better future education and training: The underlying (and often hidden) argument is that through them we are earning many new chances to learn, without them we are not fitting to the changing times of globalisation and worlwide internet as well as to the new digital generation, the so labelled "digital natives" (Prensky 2001, cf. for a general criticism of this term Schulmeister 2008). We call this discussion the (learning) innovation strand.

On the other hand, there is a long-term discussion with huge tradition (since the beginning of our culture) about the learning quality covering a broad range of topics like quality of learning design, objectives, materials, input as well as learning processes, outcomes and the achieved knowledge, skills and built competences. Many theories were developed in the past dealing directly or implicitly with the question how to ensure or to improve the learning quality (cf. for an overview Stracke 2006a). We call this debate the (learning) history strand even if some of the topics like quality management for education and training are less than 100 years old.

Surprisingly, both discussion strands, the new innovation and the old history, are not interconnected and not reflecting each other. It seems that the supporters of learning innovations do not want to refer to theories of the past and that the authors of learning history do not want to recognise global changes vice versa. That leads us to an important question that requires urgently attention and an answer in our changing times: What is the relation between learning innovations and learning quality?

Our answer is based on three hypotheses of the current learning situation:

1. Learning history should not and cannot be ignored.

2. Learning innovations are mainly technology-driven.

3. Learning is not completely changing.

First of all, it has to be stated clearly that the worldwide changes by globalisation and internet for all through world wide web and social media and communities do not justify to withdraw or ignore all theories from the past. They are resulting from many discussions across socites, cultures and centuries leading to learning experiments, evaluations, failures as well as successes and finally to the improvement of both, the learning opportunities as well as the learning theories themselves. Modern innovation theories ignoring this treasure of expertise from the history are losing a well-proven underground for basing their argumentation (even if contradictory) that is providing a huge variety of different concepts (e.g. cf. for extremes the theories of cognitive development by Piaget (1953) and the systems theories by Luhmann (1995 and 1998) and Maturana/Varela (1992)). Moreover they cannot convince by such ignorance because without definition of their relation to the historical strand they claim to jump out of nothing (see figure 2 below) and start from the scratch (what is evidently not the case).

Second, the currently claimed learning innovations based on the effects of new internet opportunities, services and social media are only dealing with technological changes and chances: Of course we can realize diverse learning scenarios and (digital) communities, services and systems today that were not available several years ago like MOOCs, social communities, blogging (Redecker 2009, Hart 2011, Daniel 2012). But these technological inventions and changes are offering only new options and pre-conditions. They cannot be successful by themselves, they still require an appropriate learning design and setting with an attractive and motivating learning environment: For those (and other) reasons we call toegther with Daniel (2012) MOOCs as the 'educational buzzword of 2012'. Therefore we direct our focus on the learning quality beyond MOOCs as MOOCs are not providing new innovative learning methods and design but only the scaling up to a huge amount of learners using traditional approaches. We believe that the future improvement of the learning quality should not depend on specific settings and tools like MOOCs but can be achieved through sound and fitting pedagogical and educational planning and design (that can include the choice for MOOC as one alternative): Learning quality was, is and will be the key for learning success and outcomes (Stracke 2012).

Finally learning is not completely different and changing only due to the globalisation, new technologies and network opportunities. The new technologies and global changes are providing challenges and chances to establish new ways to base, present and integrate learning processes within education and training and learning groups including new options for self-

regulated learning. But these new modes and types of access and interactions in learning processes do not change completely the way how people learn. The style how to use, consume and reflect learning opportunities and materials may change through increasing speed and multi-tasking and lower attention but that is only increasing the requirements for learning designers, educators and teachers.

What is most important for the success of learning processes is the learning quality. Learning opportunities have to meet the need of the learners and to provide the appropriate quality to fulfill their requirements. That can sometimes mean a simple learning course with teacher-centered education and sometimes a complex sophisticated learning environment with learner-oriented group work enriched facilitated by an educator as moderator, tutor or enabler and with new learning technologies and innovations including social media and communities. That means that learning quality cannot pre-defined but have to be adapted to the given situation and learners. In this sense, learning history and learning innovations are two different approaches and points of view that are interdependent and cannot be reflected solely but have to be analysed in conjunction for achieving the best and appropriate learning opportuniy and success. Next to them, standards are building the third source for planning and designing the best learning opportunity and quality (see figure 1 below).

Figure 1: The three Dimensions of Learning Quality

This overall objective for the continous improvement of learning quality can be called quality development: Quality development has to combine the relevant and appropriate approaches, concepts and elements from all three dimensions that are basing the learning quality: History (by learning theories and traditions), innovation (by new learning options) and standards (by consensus building on learning).

As shown in the following figure 2, there could be three alternatives and options in theory: To focus only on the learning innovations only (1.), to focus only on the history of learning traditions and theory (2.) or to arrange the mix between both approaches (3.). As already explained above, it is not possible to argue that the only focus on learning innovations can succeed by jumping out of nothing as it cannot be argued and proven how such a jump can take place by ignoring the learning experiences and theories. On the other hand, future learning opportunities have to reflect the changes in society and chances by innovations and would also fail by ignoring them. Therefore only the mix of learning innovations and history based on learning experiences and theories from the past is promising and convincing as shown in figure 2.
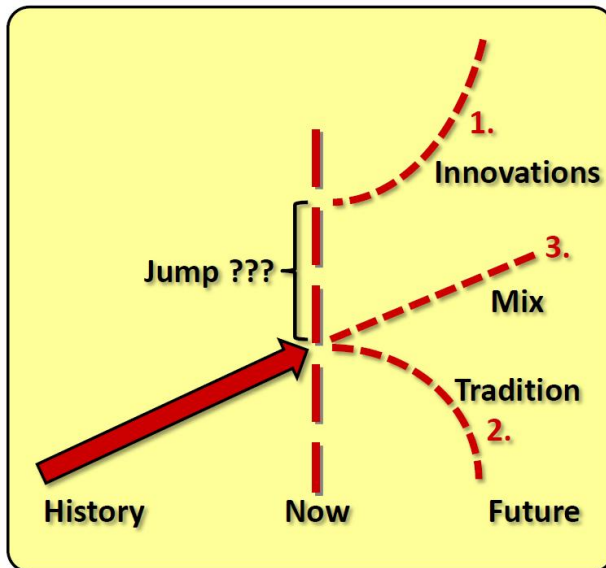
Figure 2: The Relation between future Learning Quality and Learing Innovation

Thus, we can say: Quality development is the crucial task for learning, education and training.

In the past, a long-term debate has focussed the quality development in general regarding the different quality issues, aspects and approaches (cf. Deming 1982; Juran 1951 and 1992; and for an overview Stracke 2006a). Quality development in its broad sense can be defined as follows (cf. Stracke 2006b):

Quality development covers every kind of strategy, analysis, design, realisation, evaluation, and continuous improvement of the quality within given systems.

Quality development can be described formally by the chosen scope. Quality is not a fixed characteristic belonging to subjects or systems but depends amongst others on the point of view and scope. The following differentiation of the scope into three quality dimensions has become widely accepted:

Figure 3: The Dimensions for defining Quality in general

1. Potential dimension: What are the potentials for the quality development in the future?

2.   Process dimension: How can the processes be described and optimized for the purpose of quality development?

3.   Result dimension: How can the quality development be supported regarding given results and systems[1]?

Quality development requires a long process to be established and integrated throughout a whole organisation and in particular the society. Once started, it has to become a continuous improvement circle to be finally successful (Crosby 1980; Deming 1986). Quality cannot be described and fixed by a simple definition, because in itself quality is too abstract to have any impact. Therefore, quality has to be defined and specified according to the given context and situation considering the perspectives of stakeholders involved (Donabedian 1980). It is important to identify the relevant aspects and to specify the suitable criteria. It is necessary to find a consensus amongst the different views and perspectives to gain a common understanding of quality for the given context and situation due to different and sometimes contradictory needs and definitions of quality by all stakeholders (for detailed explanations on context determinations cf. Crosby 1980; Deming 1986; Donabedian 1980).

The questions are now: What does it mean for learning, education and training and how can we transfer it to school education and lifelong learning?

The Open Learning Concept

The Open Learning Concept answers these questions and the given challenges of globalization for the modernization of learning, education and training. Open Learning combines the two major dimensions to meet the current requirements and the right balance between learning innovations and tradition achieving high quality in learning:

1.   Suitable and **open learning styles** and designs

2.   Suitable and **open learning scenarios** and environment

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[1] Cf. Donabedian 1980, for the whole long-term debate on the quality issues, aspects and approaches cf. Deming (1982 and 1986) and Juran (1951 and 1992).

Open Learning introduces the open movement into all educational sectors: Under the umbrella of the term "Open Education" many different approaches are currently summarized. The use of Open Educational Resources (OER) and the design of Open Educational Practices (OEP) are often promoted for all educational sectors based on the definition by UNESCO (2002). As a theoretical and generic framework and long-term vision for the modernization of Learning, Education and Training (LET) and for the required changes in all educational sectors, from kindergarten to lifelong learning, Open Learning has alsways to be adapted to the specific situation, target group, learning objectives and needs.

Technology-enhanced learning can play a key role in the future improvement of learning quality in education and training, enterprises, human resources and socities: Not only formal, but also non-formal and informal learning can be facilitated by technology-enhanced learning, e. g., through social learning for working smarter and social workplaces (Hart 2011 and Cross 2010, for general criticism cf. Davenport 2005). In addition the support and tracking options offered by the used technologies can provide substantial basis for data collections, measurements and evaluations of all learning and working activities to assess changes in the performance and assigned competences.

In the following we will provide first adaptations for the school education and the lifelong learning in the world of work.

Open Learning for the school education

Open Learning can be adapted as **Open School Learning** for the school sector as the combination of:

1. Open Education (innovative education with technologies)
2. Creative Classrooms (collaboration with moderation)

Open School Learning introduces the concept of Open Education within schools by improving the variety of learning styles, amongst others through the use of e-Learning and Open Educational Resources. Open School Learning establishes the vision of Creative Classrooms where teachers are continuously changing their roles according to the scenarios and students are cooperating, amongst others through developing a network of communities across Europe.

Currently, one major project funded by the European Commission is focusing such a broad and sustainable introduction of Open School Learning and technology-enhanced and competence-based learning within school education across whole Europe:

Open Discovery Space (ODS) with its focus on the school sector and teachers as main target group addresses more than 2,000 schools and offering training for over 10,000 teachers in all 27 EU member states: ODS introduces innovative learning designs and scenarios into K-12 schools through the support by technology enhanced learning and social communities.

The ODS project focuses the establishment of de-centralized regional communities through the introduction of technology-enhanced learning within the national European school systems including the provision of a portal for Open Educational Resources and the development of learning scenarios and services for the long-term improvement of school education by innovative pedagogical planning and learning.[2]

Open Learning for lifelong learning in the world of work

Open Learning can be adapted as **Open Work Learning** for lifelong learning in the world of work as the combination of:

1. Open Training (innovative non-formal training with technologies)

2. Workplace Learning (communities with peer-support)

Open Work Learning introduces the concept of Open Education within lifelong learning at the workplaces in enterprises by improving the variety of learning styles, amongst others through the use of e-Learning and just-in-time availability. Open Work Learning establishes the vision of Workplace Learning where employees can immediately search and find learning materials and expertise, amongst others through direct access to communities with peer-support and automatic detection and relating of required competences and skills.

Currently, one major project funded by the European Commission is directly focusing the realization of the concept of Open Work Learning within lifelong learning at the workplaces:

ARISTOTELE addresses the learning processes within organisations with a specific focus on enterprises and the relation between working places and (organizational) learning: ARISTOTELE develops concepts, tools and a platform to combine learning and work with competence development and business processes.

The ARISTOTELE project can provide contributions to the future improvement within learning and work by its focus and achievements on designed concept

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[2] For further information on ODS cf. online at: http://www.opendiscoveryspace.eu.

maps and landscapes: They are the basis for information models and systems to combine the four ARISTOTELE models and to establish a platform for the identification of addressed competences, skills and knowledge and automatic peer-support proposals in relation to the lifelong learning in the world of work.[3]

Summary

Learning innovation and learning quality are very often addressed separately and solely. But in fact they are interdependent and have to be reflected both for achieving the best learning quality: The best appropriate learning quality remains the core objective in learning, education and training and can be achieved by combining the three dimensions learning history, learning innovations and learning standards. Learning innovations can increase the learning quality but require a basis provided by the learning experiences and theories from the past. On the other hand learning traditions have to be enriched by innovations, in particular facing the current worldwide challenges of globalisation and worlwide internet establishment. Together with the third dimension, the learning standards, learning history and learning innovations are building the basis and potential inputs for planning and design learning opportunities. A suitable mix of history from learning experiences and theories and current innovations combined with international consensus on learning standards is required.

The Open Learning concept was introduced to fulfill these challenges and requirements: It has been roughly adapted to the school education as Open School Learning and to lifelong learning in the world of work as Open Work Learning. In general Open Learning can ensure to meet the learners' needs and to provide the best and appropriate learning opportunities and learning quality fitting to the given situation and for a long-term and sustainable improvement. In the future it has to be demonstrated that Open Learning can also be adapted across all sectors in learning, education and training, all communities, educational and training systems and societies in Europe and worldwide.

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[3] For further information on ARISTOTELE cf. online at: http://www.aristotele-ip.eu where the four ARISTOTELE models, the concept maps and information models are online available, too.

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A Life-Cycle Model for the Quality Evaluation of Educational Content

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Abstract: In this work we present a life-cycle model for the quality evaluation of digital educational content suitable for open and distance learning. This model, being the first step for designing a Quality standard, utilizes elements (views) from project and product life-cycles as defined in formal Management procedures. The result is a mixed, multi-step educational-focused process, which covers all aspects of content life: from inception, to design and production, use (and re-use) to evaluation and improvement.

Keywords: Digital Educational content, Lifecycle Model, Assessment, Quality Assurance on e-learning

1 Introduction

A new stage is set for the transition to the paperless University; International efforts plan for a full transition of University teaching material from paper to digital form within the next few years. Battling with poor awareness, Education Institutions need now to face a dual role as publishers and distributors of educational content. Standardization of the procedures used for designing and developing such content is one of the many challenges ahead. Quality standards and techniques have been successfully used for evaluation of systems and software throughout their lifecycle. However, research on content (viewed as data), and especially digital assets used for educational purposes, is somewhat behind as far as formal quality evaluation techniques are concerned [Arrascaeta Farrando, 2007].
Standardisation of educational content design, development and management requires not only standard business processes but a meaningful evaluation of the educational process itself. Questions on how tutors set goals and how the

educational content is designed around those goals, how content is consumed by stakeholder and in which way, are some of the key research questions. Current practise relies on guidelines or the transfer of best practices. To the best of our knowledge, there is no educational-specific or formal standard which certifies the educational process or educational material except ISO19796 [Pawlowski, 2007]. However, this standard is more a reference model rather than a standard in the strict sense of the term. Ther are also some interesting, process-based approaches [Stracke, 2010].

In this paper, we address the problem of how to design digital educational content (and in particular content suitable for open and distance learning) based on formal quality and assurance practises. We present a new framework for the quality evaluation of digital material mapped to its life-cycle process: quality control procedures are mapped to every step, from initiation and design to dissemination via Learning Management Systems. Assessment is not a simple procedure, since digital content is not as simple as data is and thus ISO standards are not directly applicable. We argue that educational, technical and managerial principles need to be applied in order to obtain a complete, flexible and practical model of evaluation.

The paper is organised as follows: in section 2, a categorisation of digital educational content is made while in section 3 we address in short, the main Q&A streams in the international domain and pose the basic research questions. In section 4 we present the lifecycle model and in 5, future research directions.

2 Educational Content management at HOU

Hellenic Open University (HOU) is the sole, state-funded Greek University, which provides open and distance learning for over than 15 years. The University uses formal standards such as ISO9001:2008 and ELOT:1429 for the standardisation of managerial procedures. It also operates two permanent, independent units devoted to Q&A: the Evaluation Unit for the yearly assessment of academic staff, educational content and administrative services; and the Q&A Division of the Educational Content, Methodology and Technology Laboratory for the quality management of the design and development process of the educational content. The two units have a long history of over than 12 years of Q&A; more than 30.000 students per year participate in the assessment of the 300 books, 500 hours of video lectures and Gigabytes of supporting learning material included in HOU's ciricula. An on-going effort aims at producing a large amount of digital content including Wikis, hypetext, animations and podcasts by 2015.

Experience has shown thay the quality of educational content (also referred to as teaching material or educational material) is a critical element in the quality of education. Especially in the case of distance education, it is of primary importance since there is no direct, physical presence of a tutor and content provides (besides knowledge) guidance, self-assesement and practical experimentation.

Educational content is not only diverse educationally, but technically as well: it can be roughly distinguished in printed and digital material. The printed form includes study books, which are available to students in paper or electronic form. Digital content is defined as the artefact, which combines digital content, and dissemination media (digital content container) or an application system. For example, in a digital learning material, content is text, the technological means is an application overlay (e.g. browser) while the pedagogical / didactic application is the context in which the application is used (e.g. a training module). Digital educational content may take many forms each of which is stored in a number of different formats. The basic types of digital educational content are text, audio, graphics, video and animation.

3 Quality and educational content: research questions

Quality management in Higher Education is mainly based on the application of the ISO9001: 2008 standard and relates to administrative procedures. A variant of ISO 9001:2000 for educational institutions appeared in the form of the International Workshop Agreement Part 2 (ISO IWA2: 2007) [ISO-IWA 2, 2007]. It contains general guidelines for the implementation of standard business processes within the organisation mainly replacing stakeholders of ISO9001 with educational stakeholders. On the other hand, examples of adoption of standards or guidelines in Universities are found in the UK (full frame mode Universities [QAA, 2011]), the USA (for instance in the context of Good Operating Practises in Cornell [Cornell, 2011]) and in many European countries [ENQA, 2011]. Reports avoid referencing to the use of standards in functions other than those of administrative nature.

It is important to stress the link between educational processes and the education content being used by them (for example during teaching a class in winter semester). Educational content and learning processes are closely interconnected.

To date there is no documented case of adoption or effort to design standards for assessment or certification of educational content. The strategy of some Higher Education Institutions to adopt reference frameworks or guidelines

instead of strict standards of educational processes raises the following question: is it feasible (and applicable) to formalise the procedure of producing educational content using a (new) standard? If so, a quality standard for educational material due to its nature (implementation in an academic environment, the need for practical guides) should be designed using a mix of techniques that insure formality, practicality and completeness. In order to design such a standard, one has to answer at least the following research questions:

- **What to measure?** Educational content has a diverse nature including educational, pedagogical and technical facets. Parameters such as functionality, educational suitability, educational correctness, content delivery, (self-) assessment, subject coverage and many others form one body, but they are different parts. Intrusively, different thinks must be assessed (qualitatively speaking) through different methods/tools. What is the best method to asses which part?

- **How to measure it?** The general concept of quality is neither measurable nor strictly defined clearly in the field of distance education because high quality educational content requires to reference quality, quality assurance procedures, compliance and quality-of-course to the human factor (i.e. how humans learn).

- **How to be practical:** Standards are general enough to maintain their correctness regardless of how and where they are implemented. This generality reduces their practicality and has attracted a great deal of criticism. However, it is possible to 'enhance' the practicality of a standard by including application guidelines (directions on how to apply it).

4   A life cycle for developing educational material

The development of digital educational content requires both running a project (with analysis, design and development phases) and producing a product (data view). The first step in producing a standard for digital educational content is to analyse in depth the processes of these two directions that are combined: processes and data.

The development of educational content can be regarded as a project, an approach also followed by the ISO19796 standard (which however is more general, covering a wide range of training applications) [ISO 19796-1, 2005]. The implementation of a project includes the following steps: setting the goals and objectives, design, implementation and continious evaluation by stakeholders. The sum of the phases of the project form the project lifecycle. When a project for developing educational content is initialised, the goals must be clear. The

process must follow the rules of project management (needs analysis, recruitment of appropriate staff, continuous evaluation of results vs. objectives etc.).

#	Phase	Processes
1.	Needs Analysis	1.1 Initiation
		1.2 Stakeholder definition
		1.3 Define goals
		1.4 Define Requirements
2	Design	2.1 Define Educational Objectives
		2.2 Define content type and distribution media
		2.3 Select didactical method
		2.4 Define level of interaction with the stakeholders
3	Development	3.1 Create content
		3.2 Encapsulate content into distribution media
		3.3 Pilot use
		3.4 Internal evaluation
4	Management	4.1 Use
		4.2 Re-use
5	Assesment/Impovement	5.1 Assesment
		5.2 Design improvements
		5.3 Improve content

Table 1. *Description of the digital educational content life-cycle.*

If the educational material is regarded as a product (data, knowledge or information) then instead of Project Life Cycle, the term Product Lifecycle is used. The latter contains the former. The life cycle of the product initially contains a business plan, the duty cycle that produces the product, and most importantly, further steps concerning operation (use) and upgrading. The life cycle of digital educational content should incorporate basic parameters such as data idiosygracies, this osmosis between the educational environment and the stakeholders, instructional design and assessment processes. The lifecycle is designed as a mixture of the two cycles mentioned in the previous section (Table 1) and includes the main phases of the project life cycle that produces educational material, enriched with phases and processes that map to a product life-cycle.

The life cycle includes five basic steps:

- **Phase 1: Requirements Analysis.** This phase includes processes such as:
  - ✓ Setting the initial idea and the overall objectives as well as the needs that lead to the development of educational content and making initial predictions about the type of educational materials, the financial budget and the delivery method.
  - ✓ Defining stakeholders: who will be involved and how.

- ✓ Setting Goals: setting out the basic project parameters such as the target group (e.g. distance learning, adult education, skills-training), complex types of educational content, duration of use and needs for educational support material (technical, scientific, clarifications).
- ✓ Finally, defining requirements: defining the specifications of education material such as content, teaching methodology, technical specifications, interaction and interface.
- ▪ **Phase 2: Design.** This phase includes four procedures:
  - ✓ Definition of the educational objectives: which are the educational objectives and which in-content educational scenarios will be mapped to them.
  - ✓ Define content type: select the type of learning materials (digital, LO, multimedia, hypertext) so as to reach the educational objectives in the best possible way.
  - ✓ Selection of didactical methods: selection of method(s) by which to implement the educational scenarios (build knowledge, knowledge transfer, etc.). At this point, a more detailed design of the scenarios defined in 2.1. takes place.
  - ✓ Level of interaction: optional process related educational content offered through LMS and/or requires special design features so as the user interacts with the system.
- ▪ **Phase 3: Development.** In this phase, the authors of learning content develop and deliver the content according to the educational objectives set and target group requirements. This phase includes the pilot use of the content as an optional process followed by internal assessment. The latter, is used to study the satisfaction of user expectations (educational objectives, expected functions, educational environment) at an early stage (before the product reaches the customer).
- ▪ **Phase 4: Management.** Stage 4 includes all processes involving the use of educational materials (although it is often ignored, it involves considerable indirect costs). In some cases, the use of educational content includes management tasks in e-environments such as an LMS. Educational content can be reused if it has the appropriate format (e.g. LO format), as a whole (for other educational purposes) or partly (to synthesize new training content).
- ▪ **Phase 5: Assessment/Improvement.** The last phase includes processes involving evaluation and improvements that can be made in the content after it has been delivered for use. The external assessment involves assessing the quality of educational content as perceived by the user. Design modifications involve repetition (of all or of some) of the processes of phase

2. A meta-evaluation process is also possible as an extra feedback step: it essentially examines the effectiveness of the instructional design by taking into account the qualitative and quantitative interpretation of internal metric values. Assessment processes either lead to the acceptance of content for use as is or trigger improvement processes.

Having taken into account the already established Quality Control processes of ISO9001 as they are applied and used in various stages of phases 1,2,3 and 5 at HOU, a group of stakeholders for all phases is designed (table 2).

Stakeholder	Role
Specification expert	Sets Specification on: • didactical methodology, • technical parameters • interaction interface.

Designer/Developer	(Re-)Desings content
	  • Sets educational objectives
	  • Sets learning paths
	Develops content

Quality Control Team	
Quality Control	• Technical control • Educational control (including controls on objectives, goals, learning paths, bibliography, connection to real-life examples etc.)
Internal Assement	
Reviewer (Subject expert)	Scientific control (scientific corectness, clarity and coverage of topics).
Reviewer (expert on open and distance education)	Controls open and distance education characteristics (self-assessment mechanisms, student motivation triggers, learning style etc.)
External Assement	
Users (students, tutors)	They use the material in real-life situations and continiously (at least yearly) formally asses its educational and technical quality.

Table 2. *Stakeholders of the digital educational content life-cycle.*

5 Conclusions and Future Work

In this work we presented the first step towards a formal standard for the quality evaluation of digital educational content by designing the life-cycle model for its development, assessment and use. Our appoach is based on the quality standards ISO / IEC 9126, ISO / IEC 25000 series and especially on ISO / IEC 25010, the ISO / IEC 25012 (SQuaRE quality model-Data quality model) and ISO 25020 (measurement method). Initial results have produced a mixed data and process

standard with 7 quality characteristics, 30 sub-characteristics and 72 metrics. We intend to validate this standard on the on-going production of digital educational material in order to assess its usefulness, practicability and make adjustments for a final version.

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Joint Digital Library of Open Educational Resources of Russian Universities

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Abstract: The paper provides information on an educational internet project aimed at integration of open educational resources of Russian universities and other educational institutions. The conceptual aspects of the project, the software functionality, the informational components, the structure of metadata, the questions of content management including the approach for resources collecting and evaluating are described.

Keywords: educational portal, digital library, electronic catalogue, metadata, open educational resources.

1 Introduction

Since the mid-1990s the Government of the Russian Federation has paid considerable attention to the informatization of education, the development of telecommunication networks and production of informational and educational resources. The launch of a system of federal educational portals, including the Federal Portal "Russian Education" and thematic portals for various disciplines and fields of educational activity, was an important step in the development of educational content of the Russian Internet. The works were carried out in 2002-2004 within the Federal Targeted Programme "Development of the Integrated Educational Information Environment" supported establishment and functioning of a number of educational portals which collected and systematized dozens of thousands of educational resources of various types. Coordination of the works was performed by the State Institute of Information Technologies and Telecommunications "Informika".

The educational portals have evolved as an integrated system of educational Internet projects (Abramov, 2009; Sigalov, 2012). The Federal Portal "Russian Education" (www.edu.ru) is a backbone component, an "entry point" to the system. It contains not only a list of all the portals and links to them, but also provides general information on Russian educational system: state educational standards for various levels of education, documents regulating the education system, data bases of Russian educational institutions, information for university entrants, events database (information on conferences, seminars, exhibitions) etc.

In order to unify metadata of resources according to international standards (IMS/LOM), the standard "Metadata of informational and educational resources for Internet catalogues" was developed by "Informika" and adopted by the community of portal developers. In particular, this standard suggests an integrated approach to classification of resources based on a "four-dimension" rubricator: by the level of education, target audience, type of resources and subject field.

To facilitate access to educational resources, a federal portal named "Single-Entry Window" (window.edu.ru) was designed and launched in 2006 with support of the Ministry for Education and Science of the Russian Federation. The portal integrates resources of all federal portals, as well resources from regional educational portals, websites of universities and other educational institutions, specialized educational projects and individual teachers. The portal includes the following components: a catalogue of Internet resources, a digital library, news and events, feedback subsystem (forum, questions and answers), statistical data collection, and search subsystem. The portal has become a universal "window of access" to Russian educational resources and make available efficient navigation and search of resources (Abramov, 2011).

2   Electronic catalogue and digital library

The integrated catalogue contains metadata of resources: descriptions of materials of the digital library of the "Single-Entry Window" portal and external resources published at other portals and websites (in total - metadata of over 57,000 resources).

The catalogue is indexed according to the following criteria: the level of education (primary, secondary, higher, vocational and additional education), the

target audience (student, teacher, university entrant, manager, researcher), resource type (educational sites, learning, instructional, reference, illustrative, research materials, regulatory documents, etc.), the subject field within general and higher/vocational education.

A significant part of resources catalogued (over 10,000) are educational websites: websites of universities, education authorities, scientific research institutes, primary and secondary vocational schools, institutions of extended education, libraries, publishing houses, museums, non-profit organizations, research and educational Internet projects, electronic periodicals, websites providing information support to exhibitions, conferences, competitions and olympiads. Another well-represented type of Internet resources is the open educational resources published at different websites: digital books, databases, encyclopaedias, lecture courses, virtual workshops, etc. A special subsystem of the portal provides an automated verification of availability of Internet resources presented in the catalogue. During the processing inaccessible resources are made "invisible" to users.

The catalogue has advanced tools which ensure search according to subject fields together with context search in titles and descriptions of resources, in particular: by author name, key words, words in abstracts, URL (for Internet resources), year of publication and ISBN (for published materials). The search engine takes into account the context and morphology of the Russian language. Search queries can be refined by the use of logical operators and parentheses. The portal has an option of contextual search using the tools of adjustable Google search service, which is rather efficient due to the fact that the "Single-Entry Window" resources are thoroughly indexed in Google. In particular, it gives excellent results of full-text search in publications (PDF-files) in the digital library.

The digital library of the "Single-Entry Window" portal is the largest repository of open-access full-text learning and methodical materials in the Russian Internet. The digital fund contains over 30,000 materials developed in more than 300 Russian universities and research and educational institutions. The majority of the library materials are designed for use in higher education. The library contains textbooks, manuals, course materials, lecture notes, workbooks, methodological materials, learning materials for practical trainings and labs, instructional guidelines, curricula, reference books, monographs, conferences proceedings etc.

Most of the resources in the digital library have been developed by the departments and research centres of leading educational institutions and are being used in their educational process. One of the main tasks of the "Single-Entry Window" is to integrate the resources, which are of interest to a broad range of participants of educational process, but are dispersed among hundreds of websites of higher schools, faculties and departments (it is often difficult to find them and so they remain inaccessible for teachers and students from other educational institutions). The digital library contributes to the preservation of the teaching and methodological potential of Russian higher education institutions, facilitates the dissemination of pedagogical experience and promotes circulation of publications among wider audiences.

During the digital collection building a special attention was given to teaching and instructional materials prepared by Russian universities and higher schools and peer reviewed before publication. Dozens of leading universities provided their materials at the early stages of the library development. The main sources of materials are open digital libraries of higher schools, websites of faculties and departments, and personal pages of teachers containing collections of teaching and instructional manuals.

Original materials stored in various formats (doc, rtf, PostScript, TeX and others) are converted into PDF, described and classified under certain rubrics on the basis of the metadata model adopted for the portal. Description of full-text digital publications includes the following attributes: publication title, full list of authors, subject field/discipline, abstract, year of publication, bibliographic description, ISBN, source (university/faculty/department, library, publishing house etc.), resource type, level of education. A card with metadata contains a field for feedback where visitors can evaluate and comment the material.

Full texts are mainly available in the library as a single file in PDF format. Some publications are presented in the library as a collection of files of various formats (html, PDF, DjVu, jpg, gif, etc.). In this case, there is always a "starting" file - an html-document usually designed in the form of a table of content of a certain publication that includes references to other files (for example, chapters or sections).

All full-text materials are physically located at the server of the "Single-Entry Window". Initial version of the portal included only metadata of resources with references to the full-text files available on the websites of their creators or rightholders. However, a weak point of such an approach is the lack of

guarantees of stability of Internet addresses, which are references to these files. Changing the structure of site (restructuring, using other web-technologies etc.) often leads to changing of the initial address too. It is not a rare case when some pages with collections of resources or even complete sites disappeared from the global network, especially if these sites of departments / research groups / teachers were made by students and hosted on free servers. Uploading of full-texts to the "Single-Entry Window" library guarantee their availability and integrity.

3 Content management, interaction with authors and users

The content management and acquisition of new materials are ensured by two ways: through a bulk uploading of resources submitted by universities or their structural units, and by offering of single resources by individual teachers. In the first case, the mechanism of a "bulk" upload based on XML import is used. In the second case, resources and their descriptions are uploaded by means of a web interface of the portal.

The permissions of authors or rightholders on open dissemination for educational purposes are received before publishing of the materials in the digital library. Higher education institutions - owners of large collections of materials - provide written consent on publication of digital copies of their materials in the library of the "Single-Entry Window". Permissions to publish materials are also requested by e-mail from authors and officials (heads of departments, project coordinators etc.). The portal is granted a non-exclusive right to publish digital copies of materials; all other rights are kept by the higher school and authors. Digital copies uploaded to the library are in full conformity with original materials provided by authors/rightholders. Authors are awarded by certificates confirming publication of their materials in the "Single-Entry Window".

Users of the portal enjoy an opportunity of providing a feedback. They can discuss resources in the Forum section. One can leave a comment on a resource by filling in the review field in resource's card and evaluate the resource using the five-grade scale. All users' messages pass through prior moderation. In the Questions-Answers section, visitors can ask questions related to both the methods of the work with the system and its informational content, and receive answers from the portal helpdesk.

An important element of the feedback option serves to submit of new materials to the portal by individual users. One can upload full-text material for the digital library or offer links to Internet resources to be added to the catalogue. The materials are checked by an editor, and, if a positive decision is taken, they are processed and published on the portal with appropriate metadata.

Nowadays, the "Single-Entry Window" is one of the most popular and requested educational projects of the Russian-language Internet. The portal has 100,000 - 150,000 hits and 60,000 - 80,000 unique visitors per day. The analysis of geographical distribution shows that visitors from Russia make up 75-80%, shares of foreign visitors are as follows: Ukraine - 8-12%, Belarus - 3-5%, Kazakhstan - 3-4%, USA - 2-3 %. Informational content of the portal is thoroughly indexed by the leading search engines: Google - over 500,000 pages and Yandex (leading Russian search engine) - over 900,000 pages. The total number of full-texts downloaded from the digital library can be estimated as over 5 million electronic copies per year.

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Sharing Open Educational Resources in Multilanguage Repositories - the Learning Resource Exchange and Scientix

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Abstract: The article presents and compares two ways to stimulate sharing and exchange of online educational resources across different languages and educational settings: the Travel Well criteria for learning materials and the Scientix Translation on demand service. Special attention is paid to the general features of online resources in science and maths education and their practical implications for their successful re-use in various contexts. The conclusion outlines the conditions under which those two approaches yield the expected results.

Keywords: Science and maths education, Multilanguage online repositories, Translation and localisation of Open Educational Resources, European initiatives

1 Introduction

Scientix, the community for science and maths education in Europe, initiated by the European Commission (Research and Innovation DG), has set up the Scientix observatory to provide a regular overview of the state of play of different themes related to science and maths education. The themes and initiatives examined vary in duration, scope, audience and methodology, yet all of them include elements of e-learning and the use of various online tools for education, communication, or data collection.

This article discusses the issue of multilanguage online repositories, and the exchange of Open Educational Resources (OERs) across countries and language boundaries, an issue accentuated by the expansion OERs in the past 10-12 years (OECD, 2007, p. 100-108). A special emphasis is put on exchanging and promoting good practice resources in STEM (Science, Technology, Engineering and Mathematics) education. Two examples of different, though complementary,

approaches will be presented: the Travel Well criteria employed in the Learning Resources Exchange (LRE) repository, and the Translation on Demand Service offered in the Scientix resource repository.

The LRE (Learning Resource Exchange) repository focuses on increasing the potential of OERs for re-use in various cultural and linguistic settings. The Scientix repository focuses solely on STEM education, combining learning resources exchange with community building and teacher training.

Both LRE and Scientix are managed by European Schoolnet (EUN), an international partnership of 30 European ministries of education, providing services for schools collaboration, teacher professional development and OERs. The Travel Well criteria have been developed with the eQNet project (http://eqnet.eun.org/) with the support of the European Union's (EU) Lifelong Learning Programme; the Scientix Translation on demand service is financed within the EU's 7th Framework Programme.

2   Learning Resource Exchange and the concept of Travel Well resources

The LRE (www.lreforschools.eun.org) repository hosts educational content provided by European ministries of education and other producers. It was developed by European Schoolnet (EUN) to enable schools in Europe to find educational content from many different countries and allow LRE stakeholders to easily share and exchange their digital resources for primary and secondary schools. Currently, the LRE repository contains over 200,000 OERs from more than 50 content providers.

To overcome the language and cultural barrier in exchanging learning resources between European countries, European Schoolnet, together with nine ministries of education (or agencies nominated to act of their behalf), defined the set of Travel Well criteria. These criteria describe digital learning content that has a high potential to be re-used across national and linguistic boundaries.

Although the Travel well concept was created as a response to the specific needs of the LRE stakeholders – to enable sharing learning resources on a large scale and to streamline their evaluation - the final result represents a context-independent and validated solution, both for OERs producers and users. Any teacher, repository owner or publisher can adopt this approach and use it in various settings.

The Travel Well resources (Shulman, 2012, p. 13-22):

1. Address trans-national topics
2. Don't require knowledge of a specific language
3. Are stored as a file type that is usable with generally available software
4. Don't require methodological support for teachers
5. Are intuitive and easy to use
6. Allow for interactivity with or without feedback in a digital environment
7. Have clear licence status

Shulman (2012) explains the methodology of the testing and validation of the criteria: expert teachers assessed learning objects in the LRE for their travel well potential, applying the Travel Well criteria. Their selections were recorded and analysed to gauge which criteria were considered most often as relevant, and if there were some criteria that were either dificult to evaluate or that were deemed less relevant. The results showed that the criteria are suitable for practical evaluation of learning objects, and can noticeably reduce the subjectivity inherent in expert evaluation.

Currently, over 5,300 resources in the LRE have been identified as Travel Well resources.

3 Scientix – resources for STEM education

The Scientix project was created to support and promote sharing and exchange of good teaching practice and learning materials in STEM education. It is supported by the EU within the 7th Framework Programme.

The Scientix resource repository (http://www.scientix.eu/web/guest/resources) collects teaching materials from science education projects financed by the EU under the 6th and 7th Framework Programmes, the Lifelong Learning Programme and by other national and international initiatives.

The main objective of the project is to disseminate publicly funded projects' results beyond the project partners, and ensure that these results remain available beyond the lifetime of the projects that created them. At present, there are more than 600 learning objects, results of 200 STEM projects carried out over the past 10 years.

To address the issue of cross-border use of the Scientix resources, the project launched the Translation on Demand Service[4]. This service allows users to request translation of any teaching material in the Scientix repository (provided that their copyright licence allows so[5]) to any of the 23 official languages of the EU. The requested material is translated and localised[6] by European Schoolnet, and then added to the Scientix repository. The requesters are also notified by email that the translation has been made available on the Scientix portal.

Although there have been top-down initiatives to translate and localise OERs (Albright, 2005, p. 13), the bottom-up approach of Scientix, where a resource can be translated upon request from the user community is – at least in Europe – unique.

The Scientix translation on demand service was launched in May 2010, as part of the Scientix portal. Until November 2012, the Scientix community members made 1,071 requests for translation of one of the materials in the Scientix repository, with 440 of them were accepted and the teaching material translated.

For a resource to be translated via the Translation on demand service, its translation has to be requested several times from different users. The translation requests are therefore accepted once there are at least two requests from different users asking for the translation of the same material.

It is clear that, apart from the benefits of this user-driven dissemination of teaching materials and teaching practices, there are some constraints to be taken into account. The obvious limitations concern the scope of the repository (LRE contains over 200,000 learning objects, over 5,000 of which can 'travel well'; Scientix repository has over 600 resources) and the need to secure funding for this type of service.

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[4] It was a direct response to the results of European Commission's analysis of ongoing initiatives in STEM education at national and European level published in the Rocard report. The report lists adaptation of the existing materials to national languages and contexts as a high priority dissemination action (Rocard, 2007, p. 17).

[5] All materials in the Scientix repository are published under one of the Creative Commons licences. Of the six commonly used licences, two don't allow any derivative works, including translation (CC BY-ND and CC BY-NC-ND). Around 72 % of the resources in the Scientix repository allow translation and are available for the Translation on demand service.

[6] Localisation of educational materials means adapting and adjusting the materials to the cultural and pedagogical context of the intended new use of the material. See OECD (2007, p. 104-106) and Albright (2005, p. 12-14).

Nevertheless, the experience with managing the service has also revealed some practical problems. As the Scientix portal and the information on it are in six languages (English, German, French, Italian, Polish and Spanish), teachers and other end-users who don't speak any of the languages may be discouraged from using the service. Its impact may thus be limited to teachers from specific countries and/or with a specific background.

The next stage of the Scientix project (2013-2015) will therefore focus on closer collaboration with national teacher communities in European countries. In 30 countries in Europe, the Scientix National Contact Points will be established; one of their tasks is promoting Scientix in their respective teacher communities and assisting them in using the Scientix translation service.

4   LRE – Scientix: a comparison

From the functional point of view, we can say that the Travel Well concept is qualitative, as it looks at the characteristics of the resources and defines some key features that a Travel Well resource must have. The Scientix on demand translation is, on the other hand, quantitative, as a translation is triggered by requests from the user community.

But there is also a conceptual difference between those two approaches: the LRE Travel Well concept and the Scientix translation on demand have been conceived to fulfil specific requirements.

Being an all-inclusive federation of repositories, the scope of the LRE repository (currently more than 200,000 learning objects) makes the option of translation of resources unfeasible and cost inefficient. On the contrary, the Travel Well criteria enable quick and objective evaluation of large number of objects. The validation process of the criteria (2011-2012) resulted in a showcase of more than 3,500 resources identified as 'Travel Well' (Shulman, 2012, p. 3). Since then, another almost 2,000 resources have been added to the Travel Well collection.

However, the current situation in the field of STEM education in general, and the requirements of the Scientix project in particular, limit the use of the Travel Well criteria in the Scientix repository. The major factor that comes into play is the need for additional teachers' support when using and exchanging learning resources in STEM education. The issue can be further divided into two main aspects: teaching methodology and teaching tools.

(1) Methodologies of teaching STEM. Whereas the Travel Well criteria favour methodology-independent resources (Criterium #4: Methodological support for

teachers in not needed), the abstract content of science classes makes STEM education to a great extent dependent on a specific teaching methodology. Children learn spontaneous concepts from their everyday experience. However, scientific concepts are often invisible or otherwise inaccessible; some scientific concepts thus never arise from hands-on perspective (Carlsen, 2007, p. 59). In many cases, students' preconceptions on how things work are in sharp contrast with scientific concepts and principles (Duit, Niedderer, & Schecker, 2007, p. 599). Science teachers must be aware of those prior or 'native' concepts of their students to efficiently explain science subjects.

As a result, science education materials very often require methodological support for teachers. The focus on inquiry-based learning and other constructivist pedagogies in today's science education research and practice confirm this tendency[7].

(2) The use of ICT in STEM education. The development of constructivists approaches mentioned above is often coupled with increasing use of ICT tools and technology-driven innovation in teaching practice. However, the new opportunities that ICT offers to science teachers (e.g. in visualisation of mathematical concepts or scientific modelling), go hand in hand with the issue of teachers' competence to use ICT and technology-based learning resources efficiently. Although there has been a great improvement in this field in recent years, studies and surveys on the use of ICT in schools still show that majority of teachers use ICT to enhance traditional teaching practice rather than as a integral part of their pedagogy (Balanskat, Blamire, & Kefalla, 2006).

To address these issues, the Scientix Translation on demand service is complemented with teacher workshops. In the workshops, teachers receive training on how to efficiently use different teaching materials (often directly from the producers of the materials), and can better decide what materials can be used in their own specific context.

The benefits of face-to-face interactions between users and producers of teaching materials become more apparent for complex resources (lesson plans, teaching scenarios, etc.) and hands-on experiements. In these cases, the issues of

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[7] Inquiry-based learning and teaching and the term 'inquiry' itself refer predominantly to science education (Minner et al., 2009, p. 476, cited in Eurydice, 2011, p. 70). The need to promote more widely inquiry- and problem- based- science education methodologies in primary and secondary school is one of the main recommendation of the Rocard report (Rocard, 2007). The position of inquiry based learning in national strategies concerning STEM education is described in (Kearney, 2011, p. 19-22).

appropriate teaching methodology and teachers' ICT skills may be accompanied with problems concerning the specific content of the materials; especially in STEM lessons dealing with latest developments in scientific research[8].

To conclude the comparison between the Travel Well and the Scientix Translation, it can be said that the differences between them stem from their conceptual design. The goal of the Travel Well criteria is to stimulate mutual exchange of OERs both between producers and end-users of learning resources. The Translation on demand service of Scientix, on the other hand, serves as a means to disseminate and promote good teaching practice (in its broadest sense) in STEM education.

It is important to note that the two approaches are complementary. The Scientix project is one of the content providers in the LRE repository, which means that all the resources available on the Scientix portal are also part of the LRE, and as such may be labeled as Travel Well resources, should they meet the Travel Well requirements.

To measure the direct impact of Travel Well concept and the Scientix Translation on demand service, European Schoolnet will examine the actual use and reuse of both Travel Well resources in LRE and localised resources in the Scientix repository. The first step would be to analyse the web traffic statistics data of the two respective online repositories.

5 Conclusion

The experience of testing and implementing the Travel Well criteria in the LRE repository indicates that this approach allows for easy uptake by third parties and can stimulate exchange of existing materials and production of new ones.

However, OERs bound to a specific methodology and/or OERs covering abstract (scientific) topics are often excluded from this type of exchange. Those resources – on the other hand – can be localized to different languages and environments by the Scientix translation on demand service. This kind of service is ideal for subject-specific repositories, with clearly defined sets of good teaching practice and an established active end-user community. To increase the service's impact,

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[8] The experience from the EU's Lifelong learning Programme project SPICE (Science Pedagogy Innovation Centre for Europe) shows that face-to-face meeting can to a great extent contribute to successful replication of an inquiry based teaching practice in different context (in different country and/or educational system) (SPICE, 2012).

it should be linked to other activities, such as training courses or information campaigns.

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The Appropriateness of Open Educational Resources

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Abstract: One idea behind Open Educational Resources (OERs) is opening up the access to learning resources for stakeholders who were not the originally targeted users. Even though making educational resources available for the public already is a remarkable achievement, their usefulness often is limited to a very particular context because of unclear or missing appropriateness regarding other contexts. In this paper, contextual appropriateness is investigated as a special quality criterion for OERs. We will introduce barriers against the use of OERs and demands from the educational community that need to be addressed in order to overcome such barriers. We will show that the hitherto implemented quality standards for Technology Enhanced Learning do not yet fully support such particular demands and discuss which additional steps are required for the context of OERs. We conclude with an outlook and recommendations that can open up the full potential of OERs.

Keywords: Technology Enhanced Learning; Open Educational Resources; OER; Appropriateness; Standardization; Educational Standards; Learning Context; Inclusion

1   Introduction

In recent years, the concept of openness in education emerged with credit from national and international institutions and organisations, e. g., the Hewlett Foundation, UNESCO, MIT, and the Open University. "Openness" in this context is related to sharing educational resources as well as experiences and knowledge between all stakeholders in the educational sector.

According to Conole and McAndrew (2010), Open Educational Resources (OERs) are teaching and learning materials that are freely available for use and re-purposing. D'Antoni (2008, p. 8) promotes that OERs have the potential to

play a central role in achieving educational justice in the world. Atkins et al. (2007) comprehensively describe the development of the OER movement, discuss some key-achievements, and introduce the major initiatives in the field.

The European Commission funded several projects that dealt with the production, collection, presentation, quality, and management of OERs. Just to name some related projects, "Ariadne", "OrganicEducnet", and "Open Science Resources" had their focus on building repositories of already existing OERs; the project "Concede" had the purpose to investigate approaches for the production and development of a quality concept for User Generated Content; the project "OERTest" focused on the assessment of learning efforts that were (non-institutionally) achieved through OERs; the project "OpenDOAR" collects and describes OER repositories in the worldwide context; the currently running (2012-2015) project "Open Discovery Space" (ODS) focuses on school education and purposes the centralized accessibility and support of approximately 1,5 million Europe-wide distributed learning resources. It further aims to develop a community platform that allows all stakeholders in the school sector to exchange knowledge and experiences on any contextual level (European, national, ...).

In 2010, the Open Educational Quality Initiative (OPAL), also an EU funded project, investigated barriers on use of OERs in the context of Higher Education. The initial motivation for launching this project was the insight that a critical extent of using OERs was not met (Cantoni et al. 2004), despite the successful promotion of the idea that knowledge is a public good and the creation of great amounts of highest quality resources. The OPAL investigations revealed two issues as the major barriers against using OERs, i. e., a lack of trust into the appropriateness of such freely and openly available learning resources and the "not-invented-here syndrome", which actually reflects the lecturers' fear of loosing the reason to hold ones own position (Andrade et al. 2010, p. 171); latter requires a fundamental paradigm-shift of the understanding of the role of a lecturer (Keyser & Broadbear 1999). We promote the idea that the actual reason why a lecturer holds his position should be related less to his individual knowledge (which also could be found in a book), but rather to his unique experiences and his particular ability to share those with the learners. However, in this paper, the appropriateness of OERs is focused as a source for special quality demands. We will show that following the concept of "knowledge as a common good" induces additional criteria to those that hitherto are addressed within the quality standards. In the end, we will suggest some easy to be followed recommendations on how the use and particulary the re-purposing of OERs can be fostered.

2   Quality Standards in Technology Enhanced Learning

When thinking about appropriateness of learning resources, first of all, quality standards come to mind. The quality standards that we take into consideration in this paper are related to the production and provision of learning resources and focus on providing an opportunity to objectively evaluate the actual quality of an educational resource (by defining a minimum set of requirements or documentation criteria for process and/or content description). In the context of Technology Enhanced Learning (TEL), various different quality standards are related to the design, creation, and provision of learning resources:

- The standard "Dublin Core" (2006) is an approach that fosters the unified description of educational resources through metadata;
- The IEEE-standard "Learning Objects Metadata" (2002) particularly deals with the description of course-content and course requirements;
- The standard "IMS Learning Design" (2003) supports producers to systematically define didactical aspects of educational resources;
- The ISO/IEC 10796-1:2005 defines a structured process model on how TEL systematically can be developed and designed through all production steps, starting with the needs analysis and ending with the analysis of feedback regarding the implemented resources. The particular concept of quality behind this approach is not indicating how processes exactly should look like but ensuring that all related processes and design decisions are transparent.
- The ISO-IEC 19788-1:2011 focuses on the description of educational resources through metadata.

Further related standards focus on particular contexts (e. g., the Aviation Industry Metadata Description, 2006) or special aspects of interest, e. g., the IEEE standards "Public And Private Information" (2001), which is related to manage the privacy of stakeholder-information, and "Learning Technology-Data Model for Content Object Communication" (2004) which focuses on data modelling.

Learning resources usually are being produced for a very particular context, such as a Project Management course for university students of Information Systems in the third semester in Germany. For commercial educational resources, the above briefly introduced standards are perfectly suitable for the comprehensive description of such standard scenarios (context & content): A user who searches the Internet for such a very particular educational resource, will be able to find it by using the corresponding key words in a search engine; given that the resource is accessible through the Internet and the corresponding metadata were defined and attached by authors or service providers.

3 Special Requirements for Open Educational Resources

The general idea regarding OERs is that such educational resources can be found and used by anyone in the world. However, the producer originally designed the resource with a certain purpose and targeted a specific user-context. Thus, it is quite unlikely that a re-purposer (a user who uses an educational resource in a context which is different to the original one) actually will find an educational resource that fully meets his particular requirements regarding both, content and context. Thus, OERs particularly become attractive for the re-purposers, if they can be adopted (Richter 2011) in order also to meet the requirements of other educational scenarios.

Coming back to the barriers against the use of OERs that initially were introduced in section one: Provided that an educational resource is substantially correct, a commonly understandable language has been used, and the resource has a described level of quality, it still is unclear for the re-purposer if it is appropriate for the own context. Quality standards cannot be expected to fully meet individual requirements, which might form a very particular idea of quality: In order to reach the level of an agreement, standards generally have to keep on a high enough level of generality; appropriateness, however, is context-specific and thus, cannot be defined on a general level. From the perspective of the users, appropriateness includes various layers:

1. **The actual content of a learning resource:** Does the originally expected foreknowledge meet the targeted situation? How shall a re-purposer, e. g., know about the difference between national curricula?
2. **The didactical design employed:** Is the didactical design that was chosen for the original context also suitable for the re-purposing context?
3. **Context-specific examples:** Are originally used examples helpful within the targeted context? A course on environmental protection that focuses on the responsible use of water may, even though it contently is correct for its originally targeted German context, still not reach a high level of understanding (and thus, not meet the context specific demands on quality) when being reused in an Sub-Saharan learning scenario.
4. **Optical and Cognitive design:** Does the originally applied design of a course meet the requirements of the targeted context? We know that there generally are vast national differences regarding e. g., the choice of colours, symbols, and "playfulness". However, according to McLaughlin & Oliver (2000), "*not enough is known about the ramifications of cultural inclusively for cognitive design of learning resources*".

5. **Particular cultural issues:** Are the original content and the implemented learning design appropriate to meet the special requirements of the targeted context and do not cause cultural conflicts (see Levevre & Cox 2006, Richter 2011)?

6. **Further context-specific requirements**

The above list is incomplete. We expect that there are requirements that derive from educators' everyday working life, which we cannot even imagine; at least not before getting in touch with the corresponding problem situations.

In the context of Visionary Workshops (VWs) which we held in German schools in order to promote the ODS portal, we investigated a school with a focus on inclusive education. In this school, pupils with special needs are jointly taught with mainstream pupils; just that they get differently designed learning materials and are supported in the class by an additional teacher. Inclusive classes, maybe represent the most "extreme" example for a scenario in which open and particularly adaptable learning resources are required. In contrast to educational scenarios where all learners are considered having similar contextual demands for resource design and content in common, the special needs of disadvantaged pupils in inclusive classes differ on individual level. The teachers in the VW reported that they mainly use OERs for their education because printed books cannot provide the required flexibility. Perner (1997, p. 80) found that teachers of inclusive classes generally "*prefer using specific resources based on their own and their students' abilities and needs*". We think that OERs have the potential to fill this gap and thus, to support implementing the UNESCO Salamanca guidelines on inclusive education from 1994 (UNESCO 2003).

We conducted a study on barriers against the use of OERs in the context of German schools (Richter & Ehlers 2011). Additionally to the confirmed results from the OPAL investigations, the schoolteachers communicated that OERs are only valuable for them, if the contents actually can be modified. In the ODS VW in the German inclusive school, the teachers were fully aware of their particular situation and stated that they do not even hope to find perfectly appropriate resources. However, they also crucially need to be able to apply changes to the resources in order to make them appropriate. They added that if already downloaded educational resources reveal not being adaptable, turns out to be very discouraging. In this context, they criticised that such "a simple thing" like a description of the data format of educational resources rarely is provided.

The preliminary assumption in the beginning of this section that learning resources are implemented in a commonly understandable language was highly "optimistic" and if at all, its validity is limited to very particular contexts, such as European (or Western industrial) countries. "*Four out of five websites are in English, while only one in 10 people on this planet speaks this language*"

(Kickbusch 2001, p. 289). DePalma et al. (2006, p. 4) found that 32.6 % of Internet-users either never or rarely visit English language websites. Thus, also in order to translate educational resources to a new context, adaptability is highly required. Even though, a translation of full courses might rarely be conducted, particular elements, such as figures could fit for re-purposing, if it were possible to change (e. g., translate) the embedded text (Richter & Ehlers 2011).

4 Conclusion and Recommendations

Two major outcomes were found regarding the appropriateness of OERs:

First, the understanding of appropriateness depends highly on the particular educational context in which an OER is to be re-purposed. A definition of context-specific indicators that describe appropriateness of OERs might be possible for a particular distinguished homogenous educational context (such as requirements that are defined for the "standard" school curriculum of region A"). In any event, appropriateness of OERs cannot be described as a comprehensive (in the meaning of "complete") set of general criteria, as particular contextual demands have almost an individual character. The ISO/IEC 19788-1:2011 standard provides the opportunity to define any kind of resource-based metadata and thus, could lead to a solution for insufficient context descriptions. However, this standard does not (yet) provide an exemplary list of possibly relevant metadata that would guide authors and service providers to complete a suitable description of their educational resources. Furthermore, forcing authors and/or service providers to create such comprehensive (even if not complete) context descriptions might rather thwart their opening progress and even lead to their dropout of the open community.

The second issue we found can be understood as the alternative approach to comprehensive context descriptions: A simple declaration of adaptability should become mandatory for any learning resource and particularly for OERs. As the users of OERs clearly communicated that they do not expect OERs to fit to their very specific scenarios without conducting contextual adaptation, this particular feature could at least be understood as a manageable (and thus, suitable) interim solution that supports re-purposers in their selection of OERs. Accordingly, an "appropriate OER" must be understood as an OER that at least allows re-purposers to modify contents on both, the legal (by license), as well as the technical (by format) level. This solution could easily be implemented within the common standards, with a mandatory flag. Together with a mandatory description on which actual data format is used for a particular educational resource, the requirements of the re-purposers are already met. In this term, the

related criterion for quality of OERs is not related to its' adaptability but to the proper description if (and by using which software) it actually is adaptable.

As a first recommendation, we suggest that the format of any educational resource and the status "adaptable/not adaptable" should be mandatory to be declared in the context of quality standards, in particular (as international standard for metadata definition) within the ISO/IEC 19788-1.

Secondly, we encourage all authors of OERs who agree that their resources are being manipulated to provide both versions, a version in an unchangeable format (e. g., PDF) that ensures that an OER exactly is displayed in the way it has been designed and additionally, in a fully changeable format that allows re-purposers to adapt it in order to meet the requirements of their own specific contexts. This suggestion particularly includes figures with text as such often cannot be adapted (e. g., translated) because of their chosen format.

The ODS project which right now is implementing its portal and which is going to apply improvements until 2015, is open for any suggestions of special features that may help school teachers to find and select resources from the embedded repositories. Related suggestions are welcome and required and should be addressed through the official ODS website. The ODS consortium further on invites all school stakeholders to join the project as Affiliated Partners.

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Applying visualization techniques to develop interfaces for educational repositories: the case of Organic.Lingua and VOA3R

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Abstract: visualization techniques such as diagrams have amply demonstrated their great utility as educational tools. For this reason, educational digital repositories have been trying to implement and integrate interfaces using this kind of visualization techniques, with their knowledge classification schemes, trying to achieve similar results. Unfortunately, current interfaces show a number of problems related to usability that result in a lack of user interest. This paper explores the fundamental reasons for this problem at the light of the results of several usability studies carried out in the context of the European projects "Organic.Lingua"(www.organic-lingua.eu) and "VOA3R" (www.voa3r.eu), where two different digital repositories are begin developed.

Keywords: educational repositories, usability, visualization techniques, HCI, Semantic Web.

1 Introduction

A study of current digital repositories shows that most include knowledge classification schemes (ontologies, thesauri, etc.) to help content and repository experts organize resources, and use this organization of resources to better assist users in finding and locating them. This provides additional information about their context, relations, topic, etc.

The idea of showing these schemas and allowing to navigate through them using a visual interface sounds promising and, in fact, several digital repositories have implemented or are considering implementing one. A most promising case was the MACE repository (Stefaner et al., 2009). This report shows the situation of these interfaces from the end-user point of view according to the results of several usability studies carried out for Organic.Edunet, VOA3R and Organic.Lingua. A usability study of taxonomy-visualization user interfaces in digital repositories, which is still under development, was also included.

Results show that despite the effort to develop this kind of interfaces, end users do not seem to be very interested in using them. As a result, these initiatives are underused. The intention of this document is to describe the possible reasons behind this and provide guidelines to overcome this situation.

2   Case studies

2.1 Organic.Edunet and Organic.Lingua

Organic.Edunet is a multilingual federation of learning repositories with quality content to raise awareness and forward the education of European youth about Organic Agriculture and Agroecology. It facilitates access to learning materials on organic agriculture and agroecology from all over the world (Manouselis et al., 2009). Organic.Edunet uses Agrovoc thesaurus (Agrovoc) as a knowledge representation scheme (Sánchez-Alonso & Sicilia, 2009). The first version of Organic.Edunet website was launched in 2010.
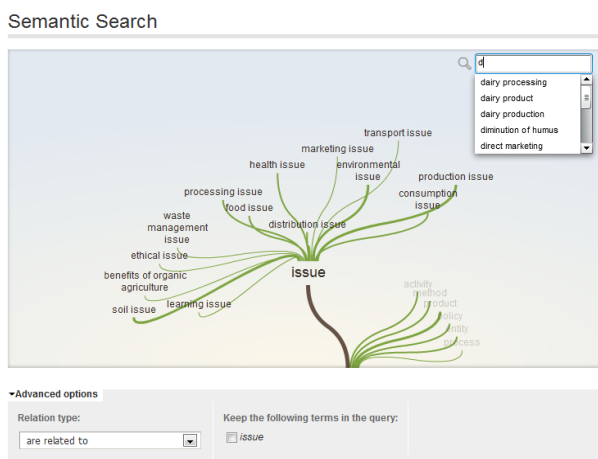
Figure 1. Organic.Edunet Semantic Search Interface.

One of the searching interfaces that this portal offers is called "Semantic Search". This interface integrates Organic.Lingua's resources classification scheme by using a tree diagram. This interface was analysed and compared (making use of benchmarks) with the rest of searching interfaces offered in the portal by means of an in depth usability study carried out during the last semester of 2011 by one of this paper authors (Martin-Moncunill, 2012)

Organic.Lingua aims to enhance the existing Organic.Edunet portal with advanced language services such as multi-lingual facilities that will further support the uptake of the portal from its targeted audiences, facilitate the multilingual features of the portal and further extend its geographical and linguistic coverage (Dimitropoulos et al., 2011).

Preliminary tests with users for Organic.Lingua project started in January 2013. All users were members of SEAE – Spanish Society for Ecological Agriculture, as we were looking for users with expertise in Organic Agriculture and Agroecology. Five more user trials are planned to be conducted in the next 6 months in France, UK, Latvia, Estonia and Greece; involving users with profiles related to education, organic agriculture, agroecology or/and students.

2.2 VOA3R

"Virtual Open Access Agriculture & Aquaculture Repository" (VOA3R) is a 3-year project that was launched in June 2010, funded by the European Commission under the CIP PSP programme. It brings together 14 organizations from 10 European countries aiming to facilitate the open sharing of scientific and scholarly research publications and outcomes related to agriculture, food and environment (Goovaerts, 2012).
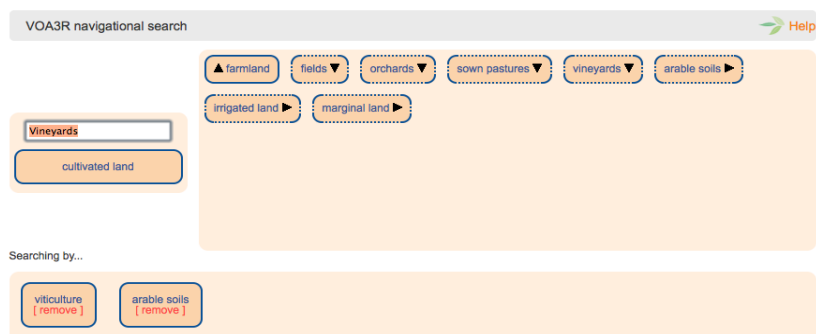
Figure 2. VOA3R Navigational Search Interface

As seen in figure 2, the VOA3R initiative also delivered effort into implementing a visual interface that allows to navigate through Agrovoc thesaurus terminology (Agrovoc) and show results linked to VOA3R resources.

The approach is completely different from the tree interface used in Organic.Edunet and described above. In this case a "drag & drop" interface allows users to navigate through the thesaurus and include terms (as many as they consider) to the search. Usability research in VOA3R project includes all the information gathered from VOA3R pilot trials as well as the one gathered by executing the usual usability techniques such as thinking aloud, interviews or cognitive walkthrougs. These results are described and published as part of the project deliverables. (VOA3R)

2.3 Usability study of taxonomy-visualization user interfaces in digital repositories
Given that the use of visual interfaces in the previous projects were not specially promising, an in-depth study for the analysis of the perception and interaction levels was designed. The experiment analised the thematic-coverage of the Europeana digital library, according to a mature and well known taxonomic structure the AAT thesaurus (Trust, 1988).The main objective was to obtain conclusions that would ultimately lead to development decisions and the adaptation of user interfaces in the abovementioned projects.

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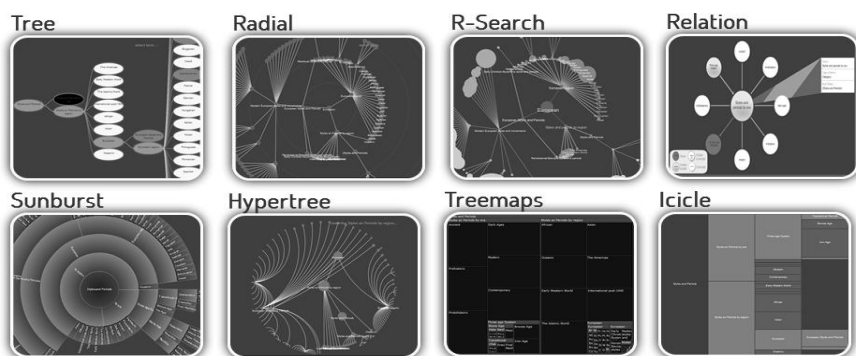
Figure 3. Interfaces analysed in the study

To perform this study, a first step consisted in surveying Europeana digital resources by using data extraction strategies to determine the thematic-coverage of the Europeana collection in the topics defined by a set of terms of the AAT thesaurus. This taxonomic structure of terms was represented through a series of interfaces developed from information visualization techniques and classified into four different strategies, namely: "radial", "hyperbolic", "tree" and "categories". Subsequently, through Human Machine Interaction (HCI)

methodologies the structure was assessed both at effectiveness and efficiency levels in order to determine which of the visualization techniques provided better perception and interaction capabilities for locating digital resources according to the topics that are best covered.

Results of this research show that visualization techniques may be useful and effective for accessing collections of digital resources, although a number of problems associated with the limited computational capabilities for information visualization are difficult to overcome.

3   Usability issues – Finding key problems

A good number of usability problems for each interface were found. For instance, the spacing problems found in Organic.Edunet's tree-like interface or the navigation problems using VOA3R's one.
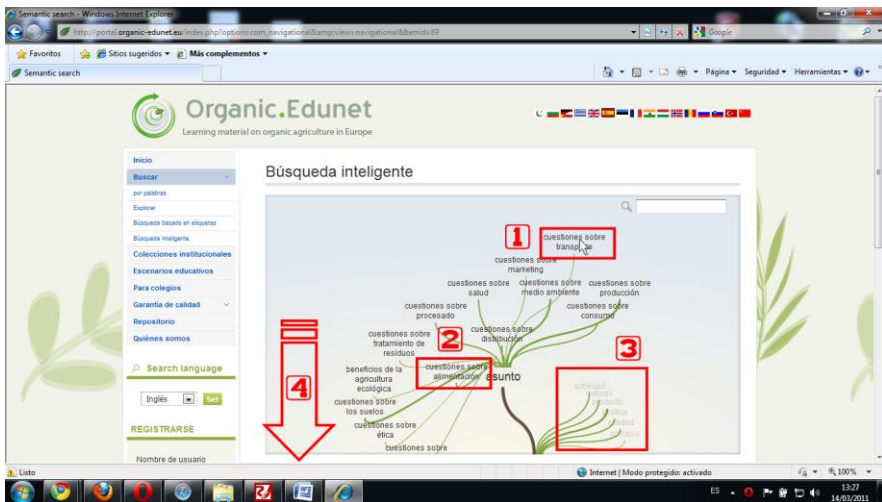
Figure 4. Screen capture describing some usability problems in Organic.Edunet "Semantic Search" interface. (Martín-Moncunill, 2012).

Amongst all these findings we identified three common key problems which could affect any interface of this kind and make it almost useless. These problems are the ones described in the following paragraphs of this section (3.1, 3.2 & 3.3). The key problems were difficult to find due to the nature of usability tests. In any usability test users are asked to try an interface and they will spend some time doing so, since they are asked to. In real life, if a user is not asked to try an

interface and finds no need in doing so, the most probable outcome will be that users will not use it.

Organic.Edunet usability study included focus group sessions. During one of these sessions this issue arised and five of the six users participating assured that in real life they would have given up using the interface just after the first few seconds. They only tried it longer as they felt forced to do so. A very similar situation was noticed during VOA3R user trials.

Finally, during Organic.Lingua usability tests in January 2013, the moderator directly asked every user at the end of each test if in real life he/she would have spent so much time using the interface. All users (6) replied "NO". A focus group was conducted just after the test to go deeper in this issue.

3.1 Utility

As several usability experts have shown, most users just want one kind of interface to search and locate resources: a plain search text box. Repositories want to go a step further by providing features to not only search for resources but to locate, contextualize and classify them using functions that rely on the semantic web. The problem is that users don't know about these functions and thus ignore the benefits of using these kinds of interfaces.

Usability trials in Organic.Edunet and VOA3R cases suggest that when a website has different tools to search / explore their contents, users will suppose there must be a reason for that. The problem is that if users don't have a fast way to know what these reasons are, they will just keep on using the interfaces they are familiarized with.

3.2 Learnability

These interfaces also require some learning effort to be used, not only because of the interface itself but also the semantic web concepts. Designers must make a big effort developing help guides and making the interfaces as easy to learn as possible.

As explained before, it is clear that if users don't know the utility of an interface, most of them will never take time to learn how to use it.

Making users understand the utility of these interfaces, will show them how useful they could be, and thus consider investing some time into learning how to use it.

The research carried out in the analysed projects shows that most users will need some kind of help/tutorial to explain how the interface has to be managed. We implemented a help section for all of them and even a training session, but all the effort were useless since the users simply did not understand why they should

learn how to use the interface. This ("why they should learn how to use the interface") must be the first entry in any help section.

3.3 Understanding the classification scheme

The third biggest problem is related to the classification schemes used. These classification schemes are usually not conceived for educational purposes but for information classification issues. For end-users it is sometimes complicated to understand the context of the classification scheme concept and the relationships that link the terms.

In Organic.Edunet usability study, all the field expert users who participated, said that they didn't understand why the terms where classified in such a way. Students and teachers said that the classification was not very useful for educational purposes.

4 Conclusions

Using visualization techniques such as diagrams to represent and navigate through knowledge classification schemes could be a very helpful tool for learning / educational repositories. However, to reach this goal an important effort on the usability side must be done during its implementation.

Three issues have been detected as general key problems that prevent users from widely adopting them: utility, learnability and knowledge of the classification schema. Making efforts trying to solve other usability problems in an implemented interface will most probably be useless if the key usability pilars previously described are not solved first.

The first problem to be addressed is making the user understand the utility of the interface, giving him a motivation to learn how to use it. Then, designers must work to optimize the learning experience.

Once the user knows why and how to use the interface, the third key concept which is a disabling problem will be the knowledge classification scheme itself. In the case of an educational portal, knowledge classification schemes should be designed for learning purposes. Regardless of the site's topic, the user must always understand the context in which the scheme was developed.

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Training Language Teachers Through Multimodal Classroom Observation: the CLODIS Project

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Abstract: The CLODIS project (Corpus di Lingua Orale dei Docenti di Italiano per Stranieri) refers to a corpus-based research developed within the DITALS Reseach Centre of the Università per Stranieri di Siena (Italy), a public Univerisity specializing in foreign language teaching and intercultural communication. CLODIS aims at creating a network of digital resources based on a corpus of video recordings of classroom interaction in Italian as a foreign language to train student teachers of Italian as a second language. At present 104 video segments of 5 min. each have been transcribed and analysed using ELAN, a linguistic software annotator that allows to create, modify and visualize every useful annotation. Future actions for further development of CLODIS are also described in the paper.

1 Concept and Overall Goal

Natural spoken and multimodal interaction is crucial for language learning, therefore language teachers have to be trained to adapt their language to their students and to interact with them during the lesson. Classroom observation is an important part of language teacher education (Kelly & Grenfell 2004) but its effects could be enhanced through observation and guided analysis of videorecorded lessons. Focus on teacher talk and on its specific conversational patterns (Sinclair 1982, Sinclair & Brazil 1982) could also be of great benefit on teacher education. Digital data (audio, video and text) presenting natural speech in context would be a very useful tool for teacher trainers, in order to help their trainees to develop teaching awareness and interaction ability, especially if such data are easily and freely accessible and properly treated through new methods of computer-based multimodal analysis.

The overall goal of the CLODIS Project (Corpus di Lingua Orale dei Docenti di Italiano per Stranieri)[9] is to create a network of digital resources based on a corpus of video recordings of classroom interactions in contexts where Italian is taught as a second or a foreign language (ITSL/FL). This database, transcribed and analysed according to the principles of Conversation Analysis (Goffman, 1983; Atkinsons & Heritage, Drew & Heritage, 1992, 2006; Schegloff, 2007) and of Computational Linguistics (O'Keeffe *et al.,* 2007), will be variously exploited in teacher education: a) to create learning objects for training teachers of ITSL/FL both in presence and in e-learning; b) to analyse teacher talk in ITSL/FL contexts by means of qualitative and quantitative research methods; c) to foster sef- study and self evaluation of prospective teachers of ITSL/FL through opensource technologies and applications for smartphones; d) to produce similar databases for other languages, in collaboration with other research centres devoted to the study of conversation analysis in educational contexts.

The project has been developed within the DITALS Reseach Centre of the Università per Stranieri di Siena (Italy), a public Univerisity specializing in foreign language teaching and intercultural communication.

2 The CLODIS Database

A corpus based research needs to give great importance to the selection of the corpus and to its organization and access. CLODIS aims at being representative of the innumerable and diversified situations where Italian is learnt and taught in the world. Therefore various and balanced examples of classroom contexts have been selected according to:
- the place (in Italy and abroad),
- the kind of institution (school, university, private language centre, association, etc.),

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- the type of teacher (Italian mother tongue or non mother tongue),
- the age of the learners (children, teenagers or adults),
- their language and culture (plurilingual classes, monolingual classes),
- their motivation (migrants in Italy, learners of Italian origin abroad, Erasmus students, seniors in lifelong learning courses, etc.).

Selection and organization of data is not to be considered as a mere technical process, on the contrary it is the basis of the project, for which the portion of the external world that will be described is of crucial importance. The structure that data assume is therefore an essential aspect to be considered and to be used as a supporting tool for our analysis and hypothesis. In other words, the validity of our assumptions is tightly linked to that of the collected data and to their organization.

Particularly in the field of spoken language, data collection, organization and analysis often imply a series of relevant decisions. The core principles to follow in the selection phase are: a) significance, b) accuracy, c) coherence and d) completeness. This is the reason why video recordings have been collected from many different contexts, that include various kinds of academic interactions.

One of the most relevant points of CLODIS is that speakers are recorded in a natural setting. As a matter of fact, being a representative sample of the considered language, the accuracy of texts selection and transcription deeply influences its validity and scientific usability.

The project is based on an on-going research, whose first step has been the creation of a multimodal corpus of 104 video sequences (5 minutes each) recorded in various contexts where Italian is taught as a foreign language. The final product will be a multilingual and multimodal corpus, made of 200 video sequences of 5 minutes each, recorded in various contexts and institutions where Italian is taught as a foreign language. Each lesson will be focused on a relevant aspect of Italian language teaching, both from a linguistic and a pedagogical point of view. In the fist case the focus may be on how to teach vocabulary, pronouons, verbs, functions, gestures etc.; in the second case the focus may be on how to give explanations, give instructions, correct mistakes etc.

Each video unit will be completed by all relevant information on the context (place, date, characteristics of the classroom and of the teacher) and will be accessible in various ways: a) as video file; b) as audio file; c) as script, transcribed and treated with a specific software for the treatment of multilingual and multimodal data (ELAN) (Brugman & Russel, 2004; Sloetjes *et al*., 2007).

The following phase consists in the revision of the transcription of these video lessons using the well-known Jefferson transcription system (Jefferson 2004; Wallis 2007; Jenks 2011). This system of conventions has been developed according to the following principles:

- *Expandability of the notation for increased granularity*: users can easily introduce additional symbols and conventions;
- *Readability of the transcript*, that will result immediately understandable, both for linguists and for researchers coming from other related fields (for example psychologists). This is possible because of the usage of clear and simple symbols, avoiding for example the recourse to the phonetic alphabet, that is really hardly readable;
- *Lack of ambiguity*: his transcription system intends to be explicit, with each symbol describing a unique communicative phenomenon;
- *Iconicity: s*ymbols have been chosen in order to be as little as possible arbitrary, preferring the parameter of iconicity (ex. capital letters to indicate a higher voice volume).

Here is an example of transcribed text, taken from CLODIS, attesting the validity of the previous arguments. It is composed of three columns, including different kinds of information: in the first one there are progressive numbers, that stand for the succession of the various dialogic turns; the second one specifies the role of each speaker involved in the interaction, and, finally, the last one contains the sentences pronounced by the speakers, enriched with the relative transcription symbols.

1	Teacher	(0.4) va bene (0.4) allora (0.2) di che tipo di testo si tratta (.) prima di tutto. (2.0)
2	Stud. 1	°difficile°
3	Teacher	difficile?
4	Stud. 2	°si (.) si (.) per me°
5	Stud. 3	perché non so (0.3) eh: perché (0.4) eh: (0.8) i verbi sono (.) in (.) que:sto: tempo
6	Teacher	((annuendo) benissimo eh)

After having transcribed the verbal interaction related to each video sequence, data have been stored in a software for a multimodal annotation. The choice of a multimodal corpus is due to the idea that the possibility of showing simultaneous aspects through different perceptive channels offers several advantages, such as the redundancy of the information, analyzable from many perspectives, and moreover the resolution of ambiguities typical of a single modality.
The images referred to a text are usually investigated as representations rather than interactions; but it's remarkable that they are often used to persuade someone, to inform, to explain something, to advise. So they can be considered as real acts, modifying the reality and the world around us. Each video-lesson is, in this way, a communicative system made of multiple semiotic codes, that cooperate to the comprehension of its entire meaning. From this point of view, a

lesson can be analyzed as a multimodal text, in which the different semiotic features interact with one another, to build the overall sense of the text itself. All the lessons are considered as a process, a complex field where both the participants and the final users can exchange useful information and experiences. Due to its intrinsic features, the interaction between teacher and student(s) is a dynamic activity, and not an autonomous entity, that constantly borrows from the external world links and references. All these phenomena are shared with the users, not only through a unique channel, but in a different set of interactions, that CLODIS aims to capture and manage within its data.

ELAN, the software chosen to treat the data contained in the corpus, has been realized by the *Max-Planck Institut* of Nijmegen, a linguistic software annotator, that allows to create, modify and visualize every useful annotation. The working screen is composed of a window (where the users can view the video of the lesson), and an underlying section that contains the annotations, divided into different lines on the basis of the number of the participants of the video sequence.
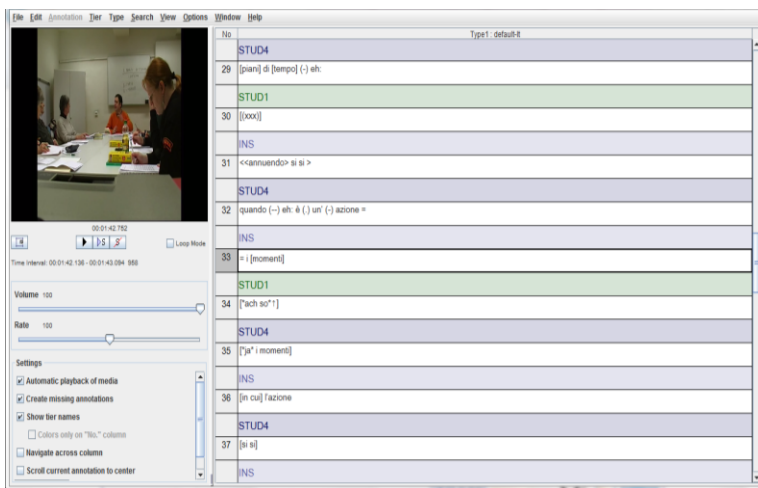
In this way, the analysis may focus on different parameters of classroom interaction, that appear simultaneously in the video: prosody, gesture, speech, which are all fundamental components of a lesson. These features are treated together to capture in the most complete way interactive strategies and skills of both teacher and students.

3 Learning Objects for Teacher Training

The initial research question of the CLODIS project was: "Which are the main features of the linguistic and methodological behaviour of a successful teacher, when teaching Italian as a foreign language to children, teenagers or adults, in Italy or outside Italy, in the most different contexts?" Recent studies enhance the importance of a modified input on the learning outcomes of the students, but only when this is associated with interaction and social activities. Therefore a further question emerges: "How is it possible to help student teachers to develop such interactional ability in the target language?" In our experience, one of the best ways to act as teacher trainers is offering simultaneously theoretical principles and case studies to discuss using a collaborative approach and frequent peer evaluation. Specific oral skills that contribute to the development of a quality teacher can be observed isolating single phenomena in a video-recorded lesson, especially accompanied by a list of observation questions on:

- planning skills: Does the teacher apply a given teaching methodology with creativity and originality? Is he/she following a project or simply improvising?
- interaction skills: Is the teacher capable to foster interaction among the students? Is he/she able to create opportunities of natural talk through information gap and relevant discussion themes?
- adequacy: Does the teacher adapt his/her language to the linguistic competence of the students? Is he/she able to chose the most adequate vocabulary, syntactic structures, gestures, images and other nonverbal codes to facilitate comprehension and imitation?
- content and explicit knowledge: Is the teacher competent from the point of view of language and culture awareness? Is he/she able to explain single aspects of the target language/culture according to the students' background?

4 Teacher Talk Analysis

Schools, universities and lifelong learning contexts would profit considerably from technology-enhanced learning environments, like the one that is being developed within the CLODIS project. The experimental phase, that will be finished in 2014, is focused on the production of software for training teachers of Italian as a foreign language in their ability to interact with students, but subsequently the project will focus on a more in depth analysis of the transcribed data that will focus on linguistic and educational aspects of classroom interaction.

The importance of corpus linguistics is well known in various research fields and has revealed many aspects of language in use, both in the written and in the oral dimension, contributing to the production of teaching materials and dictionaries (McEnery & Wilson, 2001; Sinclair 1992). Less often ICT and multimodal corpora have been applied to enhancing the quality of language teaching and learning, which is the aim of the CLODIS project.

After having encoded and tagged the transcribed data, computational and statistic methods will be applied to the CLODIS database in order to automatically extract contextual and semantic knowledge. A combined corpus linguistics and conversation analysis methodology should offer new insights to the study of teacher talk features like interaction patterns, turn taling or language use (Walsh & O'Keeffe 2010). Preliminary researches based on the available CLODIS video units have focussed the following aspects of teacher talk and behaviour related to IRSL/FL:

- teacher's treatment of students' mistakes in face to face interaction;

- teacher's multiple questions;

- teacher's adaptation to students' level of competence (vocabulary, repetition, paraphrases etc.).

5   Opensource Technologies and Applications for Smartphones

To maximise and amplify the potential of such data, disposable in machine readable form, the project aims also to elaborate an application for smartphones as self-study tool, aimed at improving both linguistic competencies (particularly in non-native teachers operating outside Italy, where lexical gaps can lead to significant communicative inadequacy) and pedagogical skills (especially in student teachers and in teachers who have had teaching experience only with a limited number of learners).

6   Collaboration with Other Research Centres

The decision to record classroom interaction is due to the growing need of training for prospective teachers of Italian as a foreign language, both in Italy and abroad: classroom observation is much more effective when guided by an expert trainer, accompanied by transcriptions and by the possibility to review each video unit as many times as necessary. But the results of the CLODIS project will

not necessarily be limited to the training of Italian language teachers. The disseminaiton of new opensource software specifically designed and implemented for teacher development and training will be also suitable for other languages, for other subjects and for further exploitation by the scientific community. This is the reason why we envisage a followup devoted to create links and shared commitments with other research centres, like ICAR (*Interactions, Corpus, Apprentissages, Representations*), at the University of Lyon, France, and its sub-unit ICAR2, working on "interactions, corpora, learning and representations" in the field of language teaching.

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Digital Further Education at German Universities – Status Quo and Challenges

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Abstract: This paper deals with the status quo and perspectives of digital further education at the universities of Saxony (Germany). Both, results of a statewide internet analysis as well as projects of an ESF program, with the main objective to promote the use of media in the academic training, will be presented. It is assumed that the situation of Saxony is representative for the other German states and thus allows conclusions for the promotion of media-based education at all German institutions of higher education.

Keywords: e-learning, academic further education, postgraduate education, life long learning, organizational development, institutions of higher education, Saxony

1   Expectations of universities to digital further education

The rapid diffusion of e-learning in institutions of Higher education shows that it is a contemporary expansion of learning and teaching methods (Stange, 2010). The technological change within the society (Erbe et al., 2004) and increased requirements of prospective students towards study programs have encouraged the use of e-learning but also caused enormous changes in higher education. These changes have been discussed in the international literature for quite time now (Ortner & Nickolmann, 1999; Köhler & Shields, 2003). In previous years infrastructural conditions – in terms of technical systems and support programs – for the use of e-learning were established (Schwendel & Fischer 2009; Köhler, Neumann & Saupe, 2010). E-learning proponents assume that this will lead to a lasting change of the academic teaching and learning culture. Another tendency of higher education is the increasing importance of scientific education in the context of lifelong learning. It is caused by economical and demographical changes, i.e. constantly decreasing half-life of knowledge and the increasing

demands of companies for high qualified specialists. Universities are facing the challenge of designing high-quality and economically sustainable further education offers to support their educational profile, reach new target groups and acquire additional sources of revenue. Additionally, the number and request of those who are interested in further education increase in a quantitative and qualitative way. They expect that postgraduate education offers practical knowledge which can be used to deal with problems in everyday work or professional reorientation (Fischer, Rose & Köhler, 2011). This paper examines the intersection of the both: (1) the use of digital media in (2) academic further education. It is assumed that the targeted use of digital media in further education leads to a relief for program planners and further education providers to design and establish market- and costumer driven education offers, taking also individual living and working conditions of the target group into account (e.g. spatial and temporal flexibility).

How do universities react to this challenge? Which status enjoys further education at the universities? What kind of support-services and –structures have been established? Subsequent sections reflect the status quo and perspectives of digital further education at institutions of higher education by a case study. The specific situation of the media-based further education in Saxony[10] will be introduced. It is assumed that the situation of Saxony is representative for the other German states and thus allows conclusions for the promotion of media-based education at all German institutions of higher education (Hanft & Knust, 2007).

2   (Digital) further education in Saxony – status quo

First of all: the public universities became only appropriate actors in the field of digital media in further education in an insufficient degree. The effort of private providers reacting on existing demands is more visible (Schulmeister, 2011). Indeed at most public universities independent activities, which aim to make digital education offers a pillar of their activity, equal to research and undergraduate (research) education, can hardly be observed. In order to identify and characterize existing digital media in further education and traditional

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[10] The Free State of Saxony is located in the east of Germany. Saxon higher education includes 5 universities, 5 universities of applied sciences and 5 academies of music and art

further education offers, an Internet research has been conducted on the websites of public universities[11], universities of applied sciences[12] as well as of conservatoires and academies of arts[13] during November 2012 and January 2013. The research counts a total of 404 further education offers at the 15 Saxon universities, universities of applied sciences, conservatoires and academies of arts. Most of them are offered by the Universität Leipzig (144 offers) and the Technische Universität Dresden (124 offers). Among the universities of applied sciences the Hochschule Zittau/Görlitz with 21 offers is the most represented. The researched further education offers can be differentiated in further education study programs, courses and individual events. Further education study programs are characterized by a formalized structure and awarding academic degrees (Bachelor, Master, Diploma). In contrast, the category »course« summarizes all the other further education offers which do not include an academic degree. Further education offers with a maximum length of one day are gathered as »individual events«. Using these categorizations there can be 112 offers identified as study programs, 189 as courses and 103 as individual events. Most of the study programs are offered by the Technische Universität Dresden (44), followed by the Hochschule für Musik und Theater Leipzig (21). The Universität Leipzig und Hochschule Mittweida are represented with 15 and the other universities with one to five further education majors. Regarding the disciplinary classification there can be noted a remarkable preponderance of further education offers belong to the field of economics and law. 190 offers contain at least partially skills in these scientific disciplines, followed by offers of engineering sciences (61). Fewest further education offers belong to the field of cultural and linguistic sciences (7). Another distinguishing feature of further education offers is the use of digital media. Digital media offers more flexibility especially for part-time academic qualification. This is why it contains a great potential for further education offers. Especially for the 345 part-time offers, e-learning applications provide opportunities for time and place-independent learning. Surprisingly only 54 among all further education offers (404) apply

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[11] Technische Universität Dresden; Technische Universität Chemnitz; Technische Universität Bergakademie Freiberg; Universität Leipzig, Internationales Hochschulinstitut Zittau.

[12] Fachhochschule Zittau/Görlitz; Hochschule für Technik und Wirtschaft Dresden; Hochschule für Technik, Wirtschaft und Kultur Leipzig; Hochschule Mittweida; Westsächsische Hochschule Zwickau.

[13] Hochschule für Musik Carl Maria von Weber Dresden; Hochschule für Grafik und Buchkunst Leipzig; Hochschule für Bildende Künste Dresden; Palucca Hochschule für Tanz Dresden; Hochschule für Musik und Theater Leipzig.

digital media. One explanation may be the research methodology: only those offers which are explicitly named by the provider to use digital media, are assigned to the category »media-based«. It is not possible to deduce statements if whether or rather digital media are used within the remaining offers. However, surprisingly only a very small part of the entire product range of further education offers is based completely or mainly on the use of digital media (e.g., blended learning offers). Most of the analyzed education offers take place in a presence scenario (336). Although e-learning applications provide opportunities expanding the so far few correspondence (18) and blended-learning-courses (50). Above all, the offers of the (smaller) universities of applied sciences are mainly characterized by presence formats. Here, the use of media – especially because of the limited staff and space capacities of this type of universities – can help to expand the product range sustainably. If at all, the use of media is explicitly referenced for education courses. Further education study programs, which are based on digital media applications, are currently exceptions among Saxon universities. Thereby the academic further education in Saxony is only competitive to a minor degree compared to international trends.

3   Current projects of digital media in further education

In the period from 2008 to 2013 the Saxon Ministry of Science and Art allocated a budget of 27 million euros based on European Social Fund (ESF) for "developing concepts, establishing and expanding structures and networks of postgratuade education, particulary using new media", in order to support the use of digital media in scientific further education and strengthen the structural growth of the Saxon economy (cf. SMWK, 2009, 26).Funded projects within this program face the challenge to develop high-quality further education offers based on digital media and establish them on the further education market. This requires the exchange of economy and science by the cooperation of companies and universities and the development of new financial resources. Moreover, learning contents developed in these projects have to align to the requirements of each market and target group.

Currently, 15 projects are funded by this ESF-program (status: January 2013). 6 other projects have already been concluded. Their durations vary between 6 and 36 months. The average budget is about 490,000 euros with a dispersion from 69,618 to 2.4 million euros. The developed education offers differ in structure, content, methods, and range from individual online modules to Master degree programs. Within the 21 projects five postgraduate Master degree programs, 15 training courses and 19 digital education modules (educational software) have

been or will be developed. In this regard, universities can benefit from the modularization of study programs, as they have on the one hand to adapt the content to this structure but on the other hand they get the opportunity to develop further education offers in modular form, which can be offered within non-academic further education. In terms of structural objectives of ESF (prevention of brain drain) most of the developed content belong to business, technical and pedagogical (education and further education) topics. Regarding the objectives of media use within the projects different information is given.[14] Most projects (n=21) focus on improving knowledge transfer (18) and therefore on the use of media in teaching and learning processes. Economic issues such as a better reuse of educational (11) content or attainability of new target groups (8) also have high priority.

For designing high quality media-based further education offers in this ESF operations area, project managers have to make complex decisions in the tension between professional profile, technology, pedagogy and efficiency. A particular challenge is that employees of the projects usually promote the further education offers from their perspective as expert scientists. Rarely they have got proven expertise in the field of educational management and/or professional media production. Q2P was established as a cross-sectional project for the entire duration of the ESF-projects to harmonize the different requirements of the actors, compensate existing deficits and promote the quality and sustainability of the expected results.

4 The project "Q2P"

The objective of Q2P is to support actors of postgraduate further education at central issues on the topic media use. This includes the provision of advice and training offerings with focus on technological, educational, and economic aspects of media design and integration. (Fischer & Rose 2012; Fischer, Rose & Köhler 2011). The Q2P services follow the principle helping them to help themselves. University staff should be enabled to develop and promote digital further education offers independently and sustainably. The service portfolio ranges from the individual support of particular projects (project coaching), to the

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[14] For the extraction of this information, the submitted project applications were compared by using a document analysis, i.e. the results bases on information provided by the applicant.

provision of standardized skills training. The content is based on the value added chain of digital further education offers – from conception to marketing.

Essentially, three different training formats are used: (1) 30-60-minute webinars to raise awareness of new issues concerning the use of media in further education. With (2) all-day workshops selected themes are deepened and practical knowledge is imparted. In addition, (3) digital assistance in the form of guidelines, checklists and online tutorials are given to enable the participants in solving current problems by self-directed learning. Additionally networking among further education actors and between them and higher education service facilities is explicitly supported. Q2P does not compete with existing higher education service facilities in the field of academic further education, but complements it and functions as guide or interface between education actors and existing service providers (e.g. e-learning centers, further education centers).

5   Conclusions: Challenges of digital further education

The previous illustrations reflect the status quo of media-based further education at universities in Saxony. But also in the other German states support services and structures have been built up to promote media-based education at universities.[15] Further examples concerning existing organizations for digital higher education in Germany delivers Bremer et al. (2010). Looking at the overall situation in the German higher education area the following conclusions concerning the challenges of digital further education can be drawn.

Organizational structures: Further education managers receive – according to their own statements – inadequate support in developing and establishing those offers. This means service structures (units) and offers should be more tailored to this field of education. Indeed there are a numerous of services within universities stakeholders of further education have access to, e.g. services of didactics, media and e-learning supports etc., but core competences of these services units are in the field of undergraduate academic education.

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[15] At universities in the state Thuringia the *Bildungsportal Thüringen*, an organization has been established to promote sharing and transfer of digital content for academic teaching among universities. In the northern German states the *onCampus GmbH* offers media-based master courses to students and employed persons.

Incentive instruments: The design of financial incentives should be reconsidered, in order to address the specific challenges in establishing sustainable further education offers. Current fundings focus exclusively on the development of education offers, but hardly on the subsequently phases of marketing resp. distribution. However, experiences clearly show that especially in subsequent phases of the value-added chain of further education the stakeholders need increased support and financial effort (e.g. according to marketing and acquisition of participants).

Staff development: Increased commitment in further education presupposes institutional incentive mechanisms, such as the allocation of funds, positive effects on career or crediting further education activities against teaching loads. Actors need support for developing competences to transfer scientific knowledge – from research – to practicable knowledge – for use on workplace in company – and to implement target-group specific and financially sustainable further education offers. Measures of skills development should take up topics of further education management (e.g., quality management, marketing and controlling etc.). Flexible and modular educational formats should be preferred that take different working conditions and experiences of academics into account (e.g. webinars, open online courses).

6 Synopsis

The present paper provides a differentiated picture of the status quo and future development prospects of digital further education at German universities. Establishing incentive instruments that include digital media is the right way to support further education offers. The program "Postgraduate education" as a part of the ESF funding helped to expand the spectrum of digital media in further education offers at the Saxon universities sustainably. Now, university managers and policy makers are invited to promote further education offers by establishing adequate supportive structures, incentive instruments as well as measures to develop human resources.

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Overview of international research in generic competence assessment

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Abstract: The competency assessment is a key issue for improving the quality of teaching and learning within the current European Higher Education Area (EHEA). The aim of this paper is to review the current research on assessment of generic competences, especially through online tools. It has conducted a search of the Web of Knowledge (Thomson Reuters) from keywords. It have been reviewed the abstracts and the results have been classified by time periods, countries and research area. It has selected a set of articles of the period 2010-2012, in which we have analyzed future trends. It is concluded that the research of assessment generic competences is been developing nowadays in educational area, although is still more important in the professional one. Additionally, it is surprising that appears most often used in preuniversity education levels. The academic context has increased research activities over the past five years, with different developments in the Anglo-Saxon countries over that those countries attached to the Bologna Process. The latest reports indicate that the learning competences must meet the individual reality of each person, so that the use of ICTs in their development and evaluation are essential given its immediacy and motivational ability. There is a clear trend towards an evaluation model that includes a 360º specific and generic competences analysis.

Keywords: Competence assessment; online tools; evaluation; Bologna Process; European Higher Education Area; ICT.

1 Introduction

2010 was the deadline for transposition of the Spanish university system to the European Higher Education Area (EHEA). In this new system, assessment of competences is one of the most important teaching-learning processes because

it becomes the main engine of change in educational paradigm (Saenzcastro, 2011).

According to García García et al. (2010), Spain and other countries engaged in the so-called Bologna Process, has made an effort in research assessment of generic competences in universities in recent years, unlike other countries in which research in this area took place since several years.

This study aims to identify how, when and what countries have done research on competency assessment. Also review in depth the literature of the period 2010-2012, and to try to find out what is known of the competence assessment, what tools have been investigated and which of these apply online today.

2   Methodology

We conducted a literature search, choosing the Web of Knowledge (Thomson Reuters), as a database of scientific content widely recognized and used internationally. We selected a set of descriptors by brainstorming between teachers with vast experience about investigation in assessing competence. Systematic searches were performed with these topics, keeping the results indicating the date of the search.

Then a selection was made based on whether the documents were in the education field or professional world, whether it is education or other university cycle, the date of publication and country of origin of the document. In documents got in the last two years there was a reading of the abstract and proceeded to select the most relevant for assessing competence. The selected documents were read and made a card reading each one doing a content analysis.

3   Analysis, results and discussion

1) Results of literature searches

The total number of reported results that the competence and in particular its assessment, it is a topic of interest to researchers. This gives a total of 173,835 posts of which 77% contain the descriptor "competenc*", against 23% who use other descriptors (skills, abilities, capabilities).

The results also indicate a predominance of research in areas facing the professional aspects instead of the educational area, as only 29.5% of the work belong to this last area. There was an increase in research competence assessment from the year 2000, especially in documents that include the term

"competenc*", while in previous years the work with other topics were quite numerous (Table 1).

During the period from 2000 to 2008, we observe a linear growth in both sets of documents, tending to stabilize in the fourth quarter in both cases. For the topic "competenc*" results in all periods exceed 20% to those obtained with other descriptors.

TABLE I. *Pooled results of searches with and without "competenc*" and related terms*

Searches with "Competenc*"			
Prior-2000	2000-2004	2005-2008	2009-2012
73	194	313	324
Searches without "Competenc*"			
P rior-2000	2000-2004	2005-2008	2009-2012
5	150	242	262

The results indicate that in years prior to 2000 research assessment of competence was virtually unknown in Spain and the Mediterranean countries, while actively investigating the Anglo-Saxon countries and rest of world (Figure 1). From that year Spain had initiated research publications and is in the second and third period that is more active, producing most of the documents from the Mediterranean area of Europe.
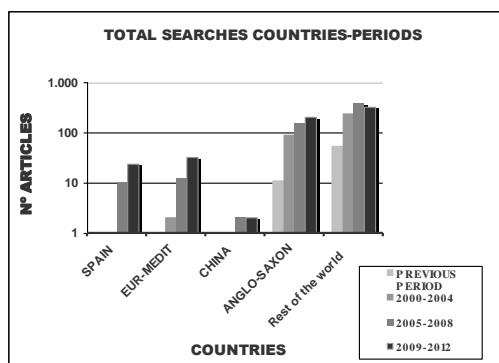
FIGURE 1. *Temporal evolution of countries research about competence assessment*

2) Results of content analysis of selected articles from the period 2010-2012

Of all the literature reviewed was decided to perform a selection of articles to analyze its contents. This task has been performed only on the articles obtained in the period 2010-2012.
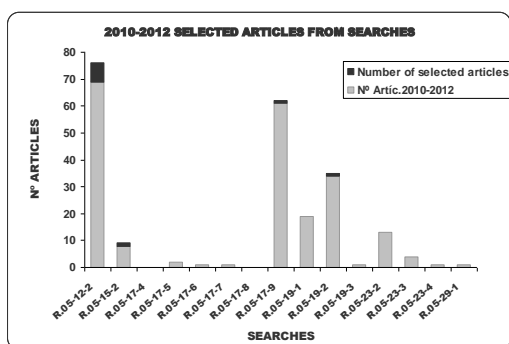
FIGURE 2. *Comparison of results for the year 2010-2012 and selected items of interest*

Of the articles selected, 52% have a comprehensive approach to the evaluation of generic versus 44%, which is a specific generic competence and 4% addresses both approaches (Figure 2).

Within the generic competence, the most concern to researchers is by far the team work with 36% and critical thinking with 27%. It is noteworthy that other generic competences are present like creativity, ethical behaviour, research and oral communication.

The reviewed articles are applied to different disciplines, highlighting the area of health sciences with a third of the publications.

Some lines of work in the articles highlight the importance of research topics, and according to Hiroaki et al. (2010) write about the concern for the prediction of success in college students, researchers focusing lack of motivation as the cause of abandonment or desertion of students in the first degree courses. Closely related, the researchers analyze the motivating effect and improvement of the results arising from the feedback of the evaluation of competencies. The tool provides an effective feedback and that is the subject of more studies about the portfolio. Its salient features for its implementation are its longitudinal development, according to Palomares (2011) continuous feedback to both learners and instructors and the possibility of being a 360 º assessment tool (Donato & George, 2010).

Continuing education after completion of college degrees is a topic from the perspective of collaborative knowledge using the Internet and Web tools such as wikis or blogs (Douglas, 2011).

There are also concerns about the interaction of expectations in the educational field with the same in politics or business and analyzes and research in relation to the need for evaluation of generic competences (Aceituno, 2010; Kimber & Wyatt-Smith, 2010).

According to Kimber & Wyatt-Smith (2010), the traditional evaluation systems are not valid for the online learning environment, critical thinking skills, problem solving and teamwork are part of the training through the network, but is necessary for both teachers and learners unlearn to accept the challenge of innovation and skills training.

The use of ICT represents a substantial change in teaching. Ethics in management competences and creativity are of interest to researchers (García-Valcarcel & Tejedor, 2011). The research proposes concrete tools for the development and assessment of competences such as e-tivities (Armellini & Aiyegbayo, 2010). Or integrated assessment programs in the context of ICTs as the program HIMATT, Highly Integrated Assessment Model Technology and Tools (Pirnay-Dummer et al., 2010).

Audiovisual media are a higher-order teaching and online teaching improves their results with the use of videos and virtual communication (Santibañez, 2010). Similarly, other authors suggest that tools such as "games" can also be incorporated for the development and competence building (The Economist, 2012).

The implementation of the Bologna agreement for the creation of a European Higher Education Area requires changes and offers some resistance from teachers and students (Palomares, 2011). The research tools include easy and rapid deployment and show favourable results for the competency assessment (Zunder et al., 2010). The development of methods of assessment and management of data based on artificial intelligence algorithms to ensure progress of individual students shows the race for competitiveness and the successful integration of students into the labour market (Vernet et al., 2010)..

4 Conclusions

The area of greatest number of publications on competency assessment is for the professional field, far exceeding the field of education. Within this, in the academic environment the results are greatly reduced, indicating increased interest of researchers in contexts prior to university level.

Nowadays, the focus on self-evaluation is very relevant; however, still takes place mainly in the professional framework. Although it has been incorporated into the educational environment, it is surprising that appears most often used in preuniversity education levels.

There is specialization of keywords that refer to the concept of competence based on research environments. Thus, the term "competence" appears in more documents than other terms such as "skills", "abilities" on the other hand, its use

has intensified since the signing of the Bologna agreement in 2000. Among the publications there is bias towards the word "skills" in the Anglo-Saxon countries, while the bias is directed to word "competence" in the area of the Mediterranean countries. As for the professional environment is more often the use of the term "skill" instead of "competence".

Some previous reviews suggest that Latin America has high research activity, although for descriptive results would need to consult other sources and use Spanish key words.

The latest reports indicate that the learning competences must meet the individual reality of each person, so that the use of ICTs in their development and evaluation are essential given its immediacy and motivational ability.

There is a clear trend towards an evaluation model that includes 360 º specific and generic competences.

The competency assessment is related to professional training, so participation in collaborative platforms through the Internet fosters creativity, original and innovative work in all areas and is a source of skills development during and after college.

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The use of ICT in education: a survey of 11.000+ schools in Europe

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Abstract: The *Survey of Schools: ICT in education* commissioned in 2011 by the European Commission took place between January 2011 and November 2012, with data collection in autumn 2011. The article presents the main findings of the *Survey of Schools: ICT in education,* findings based on over 190,000 questionnaire answers from students, teachers and head teachers in primary, lower and upper secondary schools randomly sampled. The article details the analytical framework designed and the survey methodology implemented. It then presents several 'state of the art' indicators that have been built, concerning frequency of teachers' and students' ICT based activities during lessons. The article also presents one of the main findings of the exploratory part of the analysis, introducing the concepts of *digitally confident and supportive teacher*.

Keywords: ICT in education, indicators, European survey, ICT infrastructure, ICT access, ICT use, digital resources, digital confidence, school strategies.

1   Introduction

The *Survey of Schools: ICT in education* was commissioned in 2011 by the European Commission Directorate General Communications Networks, Content and Technology to benchmark access, use and attitudes to ICT in schools in 31 countries (the EU27, Croatia, Iceland, Norway and Turkey). The *Survey* was conducted in partnership between *European Schoolnet* and the University of Liège (*Service d'Approches Quantitatives des faits éducatifs*, Department of Education)[16]. It is the first European survey on the topic to be conducted online

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[16] University of Liège's partners were specifically in charge of the whole sampling design, data cleaning and weighting, and statistical analysis (frequencies, correlations, scales development,

and the first to include students directly. Work on the survey took place between January 2011 and November 2012, with data collection in autumn 2011. The present article presents the main findings of the *Survey of Schools: ICT in education,* findings based on over 190,000 questionnaire answers from students, teachers and head teachers.

2   Analytical framework

Despite substantial funding for technology in schools, and in spite of its stated importance in achieving national and European targets, there is a lack of reliable comparative data and indicators to support evidence-based policies (Pelgrum 2009). The *Survey of Schools: ICT in Education* was designed to provide a more solid evidence base on the topic.

Across a range of international studies and reports a broad consensus is emerging on the domains for which indicators are needed on the provision, use and impact of learning technologies and ICT policy initiatives in schools. This work and priorities formulated by the European Commission in the terms of reference for the *Survey*, were used to define the following areas where indicators would be produced:

- *Schools' ICT infrastructure* (desktop computer; mobile devices such as laptops, notebooks, tablets, smartphones, etc.; broadband; school website, email addresses, virtual learning environment, etc.; deployment of equipment in classrooms, computer labs, libraries, etc.; maintenance). Infrastructure features in all definitions of the areas for which indicators on ICT in education are needed (Scheuermann and Pedro 2009); it is a basic condition, necessary but not sufficient, for any use to happen.

- *Teachers' and students' access to ICT at school* (years of experience using ICT at school, % of time, frequency) and *ICT-based activities* 93rganized by teachers and performed by students during lessons (frequency; type of activities; digital resources used). The case for the introduction of these two areas is made by Johannessen (in Scheuermann and Pedro 2009), and has been integrated in the Survey with the aim of better identifying and quantifying basic components related more to outputs – not in terms of achievement or competence (out of the scope of the present Survey) but of

cluster analysis). European Schoolnet designed the analytical framework, the questionnaires, and drafted the comments from the statistical analysis.

access, organization, frequency and context of use as well as the nature of ICT based activities;

- *Teachers' participation to initial and in service training* related to the use of ICT, both from a quantitative and qualitative point of view; research over the past years has indeed demonstrated the significant influence teacher competence has on student achievement (Owston 2006), and the relationship between teachers' digital competence and their use of ICT in the classroom; consequently, participation in professional development activities can significantly influence teachers' ICT use (Fredriksson et al. 2008; Valiente 2010), and collaboration between teachers appears as an efficient way for such professional development to happen (Bacigalupo & Cachia 2011). We also know from research in this area that more experience in using technologies is positively related to the acquisition of students' digital skills and to their confidence in using these tools (OECD 2010). More generally, incoming teachers have not been sufficiently trained in the pedagogical use of ICT (OECD 2008; Starkey, L., 2010), and teachers generally are more traditional users of the internet and lack knowledge in how to exploit social media tools for learning (MMB, 2008).

- *Teachers' and students' declared confidence* in their digital competences (operational skills, social media skills, safe and responsible internet use) and training undertaken (participation, content and modalities). Although measuring digital competence was outside the Survey's scope, an indicator was nevertheless brought in by looking at the above areas in line with the recent plea for ICT indicators focusing on outcomes and achievements (Erstad; Kikis, Scheuermann and Villalba, in Scheuermann and Pedro 2009).

- *School strategy and leadership* (policies about ICT use in teaching and learning and in subjects; discussion about ICT use at whole-school level; time for teachers to collaborate and network; incentives to reward ICT use; innovation policy, etc.); the inclusion of this area also reflects recent work by the experts mentioned above which underlines the importance of school leadership for ICT to be adopted and fully used in teaching and learning by the whole school community (Erstad; Kikis, Scheuermann and Villalba, in Scheuermann and Pedro 2009);

- *Opinions and attitudes* of school heads, teachers and students (ICT relevance for different learning processes; impact on learning, achievement and motivation), an area present in the terms of reference of the Survey issued by the European Commission.

3 Survey methodology

Sampling Design. The *Survey* collected data from schools (school heads), classrooms (teachers), and students at grade 4 (ISCED[17] level 1; primary level of education), grade 8 (ISCED level 2; lower secondary level of education) and grade 11 (ISCED level 3; upper secondary level of education, general and vocational). Unlike the two previous surveys (eEurope 2002, eEurope 2005) on ICT, the *Survey in schools: ICT in education* had a student questionnaire component. Heads of schools with students at these grades, teachers teaching them and the students themselves (only at grades 8 and 11) were surveyed.

The international sample design framework is a stratified two-stage cluster sample design.

- In the first stage schools were stratified, explicitly and/or implicitly, and selected with probabilities according to their size. Replacement schools were identified in advance in case a school refused to take part.
- In the second stage, one class was randomly selected within the sampled and participating schools, and all the students in the selected class surveyed. Classes were selected with equal probabilities within schools.

Within schools, a simple random sample of one class was drawn from the list of possible classes at the target grade entered online by a school coordinator nominated by the head teacher. The definition of 'possible classes' depended on the level. At ISCED level 1, the possible classes are all those with target grade students in them. The teacher mainly responsible for the class was in the teacher target population; if more than one teacher shared responsibility, one of the teachers was randomly selected. At ISCED 2 and ISCED 3 level, the possible classes were defined as the learning groups of students for the language of instruction (i.e. a class learning English in England, German in Austria, Italian in Italy, etc.). At ISCED level 2 and ISCED level 3, all mathematics, science, and language teachers who teach any student in the sampled class belong to the teacher target population. At ISCED level 3 vocational, if there were no language classes then an administrative unit was chosen.

Implementation process. The ministries of education in each country were asked to nominate a national coordinator (NC) and provide access to the most recent version of their official school databases. Samples of schools and replacement schools were randomly selected in each country for each grade.

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[17] ISCED is the International Standard Classification in Education (ISCED-97) adopted in 1997 by the UNESCO General Conference.

Administration process. The three survey questionnaires were translated into the official language(s) of the participating countries and made available to respondents in the appropriate language.

Administration of the survey was online. The school coordinator was emailed the URL of questionnaires, IDs and passwords and asked to distribute them to the school head, the selected teachers and students. Completion of the online questionnaires took 15 to 20 minutes.

Data analysis. After data cleaning and weighting and non-response adjustments, data were processed and standard errors calculated.

Some of the items in the school head, teacher and student questionnaires were designed to be used in analyses as single items (for example, gender), but most items were designed to be combined in some way in order to measure latent constructs that cannot be observed directly. For these items, transformations or scaling procedures were used to construct meaningful indices (varimax rotation with SAS software, Cronbach alpha's calculation, etc.).

A two-step cluster analysis method (in SPSS software) was used to identify groups of students, teachers, and schools that are similar to each other on a number of preselected variables. When determining the number of clusters not only statistical criteria were taken into account (best fit) but also criteria of interpretability and similarity across the different grades, i.e. solutions that were interpretable and that fitted each grade.

The Survey findings are based on 156,634 questionnaire answers from students, 24,522 from teachers and 10,137 from head teachers in 27 countries[18], collected between September and December 2011.

4   Findings concerning students' effective use of ICT for learning

This chapter only reports some findings concerning students' use of ICT for learning at school and at home**.** Nevertheless, much more detailed findings concerning students' as well as teachers' and school heads' use, opinions and attitudes have been produced by the Survey. Data about schools' ICT equipment, policies and strategies to support ICT use for T&L are also available.

Frequency of ICT use during lessons

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[18] Due to schools' low participation rate to the survey in Germany, The Netherlands, the United Kingdom and Iceland, data concerning these countries were not considered representative enough to be included in the analysis and are not presented.

Multimedia tools are the resources **most frequently used**, i.e. a minimum of several times a month by around 65% of students at all grades.

Other digital resources and tools are used a minimum of several times a month by around 20-40% of students at all grades. Exercise software, online tests/quizzes and digital textbooks are the most frequently used, as well as learning/video games, but only at grade 8. This situation is illustrated in FIG. 1

Fig. 1 : Use of resources and tools during lessons at grade 8 (in % of students, EU level, 2011-12)
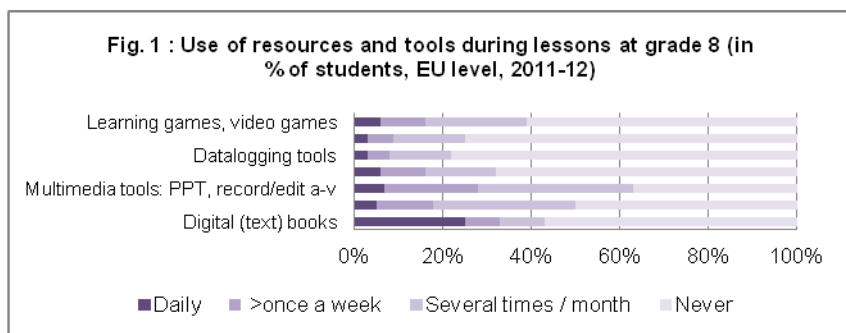
Nevertheless, **between 50% and 80% of students** (depending the grade and the specific tool concerned) **never or almost never use such resources**. This situation should be further investigated, using case studies for example, to identify if this is the result of a lack of existing good quality material related to the curriculum, insufficient information provided to teachers, a lack of skills at teacher level to use and integrate them into their teaching, or a lack of time for them to become fully familiar and feel comfortable to use such tools in the classroom with students. Adequate support initiatives could then be developed to improve the situation.

A factor analysis of the frequency of the set of specific ICT based activities (searching the internet, chatting online, posting homework on the school website, using computers to conduct experiments, etc.) reveals that, at EU level on average, students undertake them **several times a month or even more rarely**. Only at grade 11 (and particularly in general education) in Denmark and Norway (two countries where the frequency is the highest compared to other countries), students engage in ICT based activities at school more frequently.

The relationship between teaching style and the use of ICT or ICT based-activities
The relationship between teaching style and ICT use during lessons for teaching and learning has been investigated by the *Survey*. Student-centred learning has been defined as a learning model that places the student at the centre of the learning process, i.e. students are active participants in their learning; they learn at their own pace and use their own strategies; learning is more individualized than standardized. Conversely, teacher-centred learning has been characterized

by the transmission of information from a knowledge expert (the teacher) to a relatively passive recipient (student/learner) or consumer.

Both student- and teacher- centred teaching and learning activities have been reported at EU level to a similar extent: from teachers' answers, student-centred approaches seem a little more frequent; but students' answers show the opposite, i.e. slightly more frequent teacher-centred activities. This finding reveals a difference in perception between teachers and students, and probably in expectations from students. Nevertheless, in the present Survey, no correlation has been found between the teaching style and the frequency of ICT-based activities.

Comparing students' ICT use at school and at home

Students' length of experience with computers is **much higher at home compared to school**. On average at EU level, only between 40 and 60% of students have four years' or more experience at school compared to 75-90% of students at home.

Comparing students' ICT-based activities at home and at school, it appears that – as could be expected – **activities at home are more frequent**, and up to twice as frequent for 'fun' activities, i.e. related to music, film, sport, etc. It is interesting to notice (see FIG. 2 below) that **home ICT-based activities related to *learning***, i.e. listening to/watching the news, online searching for information on specific topics of interest (not practical ones) are more frequent compared to ICT activities at school. This last finding underlines on the one hand, the extent of informal or non-formal learning effectively taking place out of school, and on the other hand, students' interest in spontaneous self-directed learning.

Fig.2: Student's home and school activities (all grades; mean scores; EU level; 2011-12)
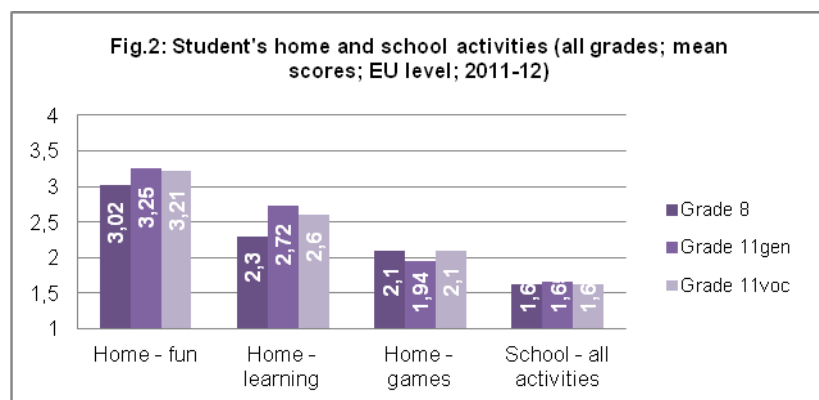
5 The exploratory part of the *Survey* results

The *Survey* also explored some specific patterns or profiles about ICT use for T&L at three levels: the school, the teacher and the student level. These patterns, representing groups of people behaving more or less the same way, or structures sharing more or less the same characteristics, were used to define respectively the *digitally supportive school*, the *digitally confident and supportive teacher* and finally the *digitally confident and supportive student*. These profiles can in turn be used to develop some interpretations and predictions about ways to optimize ICT use in T&L.

The schools' effect on students' ICT based activities during lessons

A cluster analysis was processed on schools' policies, strategies and concrete support measures (teachers' participation to training, availability of an ICT coordinator, etc.) to integrate ICT in T&L, as well as school heads' opinions on ICT relevance for T&L, and obstacles to its adoption. As a result, four school profiles were identified: (1) schools developing a strong policy and strong support, (2) schools offering a weak policy but strong support, (3) schools developing a strong policy but offering weak support, and (4) schools characterised by weak policy and weak support. The frequency of students' ICT use and activities was then compared according to the school profile they belong to.

Students in schools with strong policy <u>and</u> support measures show the highest frequency of ICT use and activities. Interestingly, students in schools with weak policy <u>but</u> strong support measures report a similar level of frequency of ICT equipment's use and activities; even more interestingly, these students report more frequent use of ICT equipment, and even more frequent ICT based activities in the classroom, compared to students in schools where policy is strong but concrete support measures are weak.

A similar pattern is observed concerning teachers' use of computers/internet in the classroom.

As a result, the ***digitally supportive school*** at EU level is defined in the *Survey* as **the school developing strong concrete support measures *whether or not* associated with strong policy**. On average at EU level, between **40 and 50% of students at grades 4, 8**, and **11 in general education** (almost 35% in vocational education**)** are in such *digitally supportive schools*. A few countries are far beyond the EU average: **Slovenia** and **Norway** at all grades, the **Czech Republic,** especially at grades 4 and 8, and **Denmark,** especially at grade 11 in general education. The situation appears less positive in some countries where fewer than 15% of students are in *digitally supportive schools* at some grades (Greece and Turkey at grade 11).

According to such empirical evidence, **specifically boosting concrete support measures - such as the provision of ICT coordinators, professional development opportunities for teachers, etc. - appears as an option for schools wanting to develop ICT use in T&L** (and not always knowing how/where to start or prioritize). **Progress in this specific area is still needed with the aim of scaling up provision to improve T&L conditions offered to a large majority of students, at EU level and more specifically in certain countries**.

The teacher factor in students' use of ICT for learning

Another cluster analysis was processed concerning teachers' access to and use of ICT in T&L, their participation in professional development activities in the area, their confidence in their ICT skills, their opinions and attitudes about using it for T&L, and the obstacles to integrating ICT into T&L.

This cluster analysis reveals the following four types of T&L environments: (1) high teacher confidence/attitude and high access to equipment, (2) high teacher confidence/attitude and low access to equipment, (3) low teacher confidence/attitude and high access to equipment, and (4) low teacher confidence/attitude and low access to equipment. The frequency of teachers' ICT based activities with the class was compared according to the learning environment they belong to. Highly confident and positive teachers with high access to equipment report the highest frequency of ICT based activities with the class; they have been defined in this Survey as the ***digitally confident and supportive teacher***. On average at EU level, **between 20% and 25% of students are taught by such digitally confident and supportive teachers.**

Interestingly, confident and positive teachers working in schools with low access to equipment report more frequent use of ICT based activities with the class compared to teachers with high access to ICT but demonstrating low confidence in ICT based activities, and less positive attitudes towards ICT use in T&L.

The proportion of *digitally confident and supportive teachers* varies between countries and grades. A few countries are considerably above the EU average when looking at the percentage of students taught by such teachers. This is the case in **Denmark** and **Norway** at grade 11, as well as **Portugal** in vocational education. The situation is much less favourable at some grades in Austria, Belgium, Cyprus, Finland, France, Greece, Luxemburg, Romania and Turkey.

Such empirical evidence suggests that increasing teacher professional development opportunities could be a potentially efficient way to boost ICT use in T&L through the development of highly confident and positive teachers. Focusing policies specifically on teacher professional development is supported by the fact that teachers' opinions about the impact of using ICT for learning purposes are already positive or very positive; the Survey shows that around 80%

of students are in schools where teachers and school heads share such positive views. **As a consequence, it appears that convincing teachers and school heads about the relevance of using ICT for T&L is therefore no longer a priority or lever for change, but equipping them with the digitally based teaching competences they need for transforming positive opinions into effective practice in the classroom certainly is**.

The effect of students' use of ICT at school or home on confidence in their digital competences

Another cluster analysis was processed about students' access to ICT, the number of years of experience with and frequency of ICT based activities at home in their free time, as well as at school during lessons. As a result, three student profiles appear, i.e. those having: '1) high access/use at school and at home, (2) low access/use at school and high access/use at home, and (3) low access/use at school and at home.

In the Survey the student profile characterised by **high access/use at school and at home** is defined as the *digitally confident and supportive student*. Such a profile is indeed associated not only with the highest frequencies of ICT based activities at school, but more interestingly **with higher levels of confidence** in their operational ICT skills, social media skills, and ability to use the internet safely and responsibly, as well as **with the most positive opinions** about ICT use in T&L and **attitudes** towards computers. High ICT access and use only at home appears to be unable to provide the same high level of confidence and positive opinion about ICT use for T&L.

On average at EU level, around 30% of students at grade 8 and 11 in vocational education can be considered as *digitally confident and supportive students*; **around 35% of students** are in this situation at grade 11 in general education. The highest percentage of students sharing this profile is systematically found in **Denmark** at all grades and **Norway** at grade 11.

On average at EU level, **around 50% of students** at grades 8 and 11 in vocational education, i.e. the largest group of students, correspond to the profile characterised by low access/use at school and high access/use at home (around 35% at grade 11 in general education). In addition, around **28% of students** at **grade 11 in general education** are part of the low access/use at school and at home profile.

These findings make the case for strengthening action at institutional, local, regional, national and European levels, to boost ICT use at school with the objective of reducing the gap between ICT use in and out of school, that still exists, and also give the opportunity to around 30% of 16 year old students who do not have high access to ICT at home to experience it at school and develop their confidence in their digital skills.

The relationships between the schools', teachers' and students' profiles
The three profile descriptions provide, for each country, the percentages of (i) *digitally supportive schools*, (ii) *digitally confident and supportive teachers*, and (iii) *digitally confident and supportive students*.

Correlation analysis reveals relationships between these profiles. **Education systems characterised by a high percentage of digitally supportive schools include a large percentage of digitally confident and supportive teachers or students, and vice versa.**

To some extent at grade 4 and at grade 11 in vocational education (a correlation of 0.43 and 0.54 respectively), **as the percentage of digitally supportive schools increases, so does the percentage of digitally confident and supportive teachers**. There might be national/regional contexts that might favour the development of digitally supportive schools and teachers, or digitally supportive schools might encourage teachers to become supportive, or the reverse.

To a considerable extent at grade 11 in general education (0.70 correlation), **countries with a high percentage of digitally supportive schools are also countries with a high percentage of digitally confident and supportive students,** and few digitally supportive students can be found in countries with few digitally supportive schools. **A similar trend** is observed but **to a much smaller extent, at grade 8 and 11 in vocational education** (a correlation of 0.26 and 0.19 respectively).

Finally, a relationship is also observed between the digitally confident and supportive teachers and students. **To a considerable extent at grade 11 in vocational education** (0.73 correlation), **countries with a high percentage of digitally confident and supportive teachers are also countries with a high percentage of digitally confident and supportive students** (even if the correlation is not statistically significant which, as mentioned previously, is not surprising because of the size of the population concerned, i.e. the number of participating countries). **The trend is similar but to a more limited extent** (0.43 correlation; again, not statistically significant) **at grade 11 in general education**.

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Quality Inclusion and Transition for Disabled Students: an innovative international framework

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Abstract: Issues around childhood have been significantly neglected in most countries for a number of complex reasons to do with value attached to the role of childhood in society. This raises questions of how to connect concepts of *childhood* to concepts of *inclusion* - and for both concepts to link to *transition*. The FIESTA (*Facilitating Inclusive Education and Supporting the Transition Agenda*) network focuses on achieving effective transition through collaborative working for children with special educational needs. FIESTA develops multi-disciplinary ways of working and teaching to enhance inclusion based on the child's educational, health and social needs. It focuses on common agendas, pooled expertise and methodologies to enable quality inclusive approaches. FIESTA is developing transferable tools to be used for not just SEN pupils but for all other pupils who may be particularly vulnerable during periods of transition.

Keywords: Inclusion; transition; specialized pedagogy; disability; assistive technologies; guidance; ergonomics; universal design.

1 Contexts for Inclusion: disability and education

Over the past two decades there has been a dramatic growth in the numbers of students with disabilities participating in third level education in Ireland. This reflects patterns that have emerged in some other European countries. While absolute figures are difficult to establish, both AHEAD (*Association for Higher Education and Disability*) and the Higher Education Authority (HEA) report significant and at times dramatic rises in participation (HEA 2004). Increased participation rates have underlined the often significant support needs that exist and resource implications of providing such supports. The rates also highlight the need to provide awareness training to academic staff and administrators once students reach third level. Not least of the elements is the transformative

potential of advanced technologies to enhance pedagogic and environmental adaptations that facilitate ever-greater levels of integration for disabled students.

The rapid growth in numbers of students with disabilities also highlights areas of need that pre-date admission to higher education - assessment, coordination, determination of needs, allocation of supports, funding, assistive technology and coordination. Increased participation also highlights needs following participation in higher education - progression to employment, ongoing supports, independent living, transport and qualitative research for future planning.

The development of innovative responses to issues around SEN (special education needs) depends on both the rich historic debate concerning disability, inclusion and legacies of institutionalization as well as on understanding the potential for transformative learning in processes of meaningful inclusion and mainstreaming. In a range of issues, new understanding and original research have emerged from increased participation of students with disabilities at all levels. These areas include:

- Adaptive technologies
- Vocational evaluation
- Assessment
- Counselling
- Materials design
- Environmental design
- Software design
- Medical supports
- Legislation
- Innovative pedagogy

Such issues underline the benefit of human-centered multidisciplinary approaches with a strong focus on linkage between academic inquiry, practical applications and community benefit. At a time of profound global challenge, this demonstrates that enhanced participation and equality of opportunity can contribute powerfully to a learning culture of quality and excellence. This happens through innovation and inclusive design where the contribution of hitherto excluded groups (like students with disabilities) to socio-economic and educational development strategies is seen as an investment rather than a cost.

In 2007, as part of the objectives contained in the Lisbon Declaration process, the European Council of Ministers identified inclusive education as one the of 16 indicators for annual progress monitoring across EU Member States (European Commission 2007). Students with disabilities have traditionally been under-represented in educational systems through a combination of segregated

structures, low educational expectations and a lack of needed supports. Although many significant developments have taken place on an international basis to harness and adapt inclusive education, this remains very challenging for many EU Member States. A common feature of services for students with disabilities in Europe is the separation between health, social services and education functions and responsibilities. The adoption of a rights based approach to disability has in most countries come in some way to fruition mainly due to international and European developments. All European countries have ratified the *UNESCO Salamanca Statement and Framework for Action in Special Needs Education* (1994). "This collective statement is a major focal point of special needs education work in Europe - it is still a keystone in the conceptual framework of many countries' policies" (Watkins, 2009).

One could assume that with the adoption of these policies that equity in the education system for pupils with disabilities with non-disabled pupils exists. However this is not the case. For pupils with disabilities there is evidence of lower levels of educational qualifications and workforce participation relative to those without disabilities. This frequently results in social isolation and economic adversity. The disparity between individual and community based models demonstrates that continuing gaps exist at policy level regarding fully inclusive education for disabled children (Ainscrow, 1999). Even in those countries where the policy context supports a shift to inclusion, specific professional supports to develop practice. However, inclusion can be fostered in settings that have flexible curriculums, staff exchange and training programs, processes for pupil participation and practices of peer mentoring and support for parents, pupils and professionals (Bruce, 2005).

2 Inclusion and transition in SEN provision

Although, significant developments have taken place to harness and adopt inclusive education, transition and collaborative working remain core areas, which have been neglected in facilitating inclusive education for children with special educational needs.

The FIESTA (*Facilitating Inclusive Education and Supporting the Transition Agenda*) network focuses on achieving effective transition through collaborative working for children with special educational needs. FIESTA is a three-year (2011-2014) network funded by the *Education, Audiovisual, Cultural and Executive Agency* (EACEA), under the Comenius program of the European Union's *Life Long Learning Program*. Enable Ireland Disability Services is the network Lead Partner.

In addition there are ten partner organizations in eight other countries, experts in fields of education, health and social services. The FIESTA network aims to develop a multi-disciplinary learning approach for professionals in education, health and social services in order to facilitate the additional learning and support requirements of children with special needs during periods of transition.

The network facilitates children with special needs - and families - during the following periods of transition: (a) Transition of children with special needs from pre-school to primary school and primary school to secondary school. (b)Transition of children with special needs to mainstream environments.

FIESTA examines how multi-disciplinary ways of working can enable enhanced inclusion and a cohesive system that centers on the child's educational, health and social needs to set common agendas, pool expertise and develop common work methodologies to enable holistic and inclusive approaches. FIESTA is developing transferable tools (a school self-assessment pack, transition starter kit for parents, teacher training modules and e-learning modules) designed for deployment in SEN contexts and allied environments.

The network enables professionals, pupils and parents to outline and explore the common issues, knowledge areas and skill requirements that are demanded of those working with pupils across differing occupational boundaries and contexts in the fields of health, education and social care. "Across the three main service systems of education, health and social services, we need a shared perception of what it means to have a disability; a shared means of addressing the challenges it raises; and a shared agenda of research and personnel training" (McConkey, 2002). This project recognizes that transition for children with special needs may be more difficult than for other children since, in addition to the usual changes, the process concerns the change of a whole range of provision and related services.

Across the eight partner countries in FIESTA there is a common policy shift towards inclusion based on international developments. However, in many cases, there was evidence of integration models rather then inclusive processes. Integration traditionally refers to the education of children with special needs in a mainstream setting. The special educational needs of a child must be adapted and fitted within that mainstream environment, which may be a prescriptive (and in some cases isolating) experience. For the most part it was evident that children were experiencing integration i.e. joint schooling, separate special classes or segregated special schools. Inclusion refers to the adaptation of the current systems within the school. Many partner countries reported that further training was a priority in order for schools to be fully inclusive.

A number of *barriers* have been identified, which affect the facilitation of inclusion:

- Attitudes of parents, teachers and pupils
- Lack of diversity and flexibility to meet children's needs
- Professional fears/prejudice, scarcity of teaching methods and strategies
- Preoccupation with disability classification
- Inability of national policy to influence local settings and practices
- Inaccessible buildings
- Lack of training or professional development for teachers.

A number of approaches were identified to facilitate inclusion such as:

- Access to a flexible curriculum
- Programs for staff exchanges and training
- Regular reviews
- Dialogue and communication with all stakeholders.
- Facilitation of a collaborative/partnership approach
- Active pupil participation
- Peer mentoring.

3   Supporting Transition

The FIESTA network project has demonstrated in its initial research conclusions that transition for children with special educational needs may be more difficult than for other children. More recent studies have found that effective transition programs for SEN children involve a range of stakeholders. Using a participative approach it is possible to harness educational continuity through facilitating collaborative working for all stakeholders involved in periods of transition.

The notion that transition is a once off period is beginning to evolve and change. Rather transition is a multi-faceted, fluid experience that should be shaped primarily by the pupil. Transition is a series of processes which children experience, unique to each individual. The key is to build collaborative working with children, young people, families and communities into organizational and management structures to facilitate transition.

From a cross cultural comparative perspective, the project highlights that transition periods for pupils with special needs is considerably more difficult than for their non-disabled peers. Similar experiences found that transition (from early years settings to primary and primary to post primary) was difficult for

professionals due to lack of communication and curriculum differences. The amount and level of quality information exchanged is not on a continual basis or considered the norm. In many cases teachers are not aware of pupils' needs prior to the start of the school term. The process of transition was completed in an ad hoc or informal manner with no formal procedures in place.

A rigorous analysis of the concepts and practices involved in transition demonstrates that disabled children and their families benefit from bespoke information on transition, involvement in flexible collaborative planning processes well in advance of transition key-points and accurate planning processes, including clear agreements and specified time lines). This links education and additional schooling supports to prior issues (psychometric assessment, educational evaluations, determination of needs, parental expectations, available resources) and also to future issues (post-school placement strategies, progression, determining learning goals, setting vocational targets, specialized employment/further education targets).

The FIESTA project focuses on achieving effective transition through collaborative working. The difficulties associated with transition can be exacerbated for pupils with special educational needs. Research shows that one of the most difficult periods in a pupil's educational career is the transition from primary school to secondary school (Zeedyk et al 2008). In many cases the transition from pre-school to primary school centers around adapting the environment to meet the child's needs. It is also a period where professionals involved in the pupil's development begin to meet and exchange knowledge in order for successful transition to take place.

4   Quality Innovation in SEN systems

The FIESTA project has included two fundamental research aims. These are (1) to examine examples of best practice identification of children with SEN who transitioned into the first year of mainstream primary school from either a specialized environment or a mainstream early year's environment and (2) to identify examples of best practice for children with SEN who transitioned from mainstream primary to mainstream secondary schools. Identification of best practice is undertaken through a mixed methods approach where children and families - along with a wide range of professionals - participate in the research.

Most commentators agree that transitions in general, and early years transitions in particular, have never been higher on the agenda of policy makers. The

interest in children's rights helps us understand transition is not just a theoretical issue. It is an immensely important social one with most obvious ramifications in education. This early transition affects not only the initial experience, but also school life, and affects ways of coping with other life transitions.

Parental involvement is critical to the transition process and research demonstrates that parents' involvement in helping their children succeed exerts a positive influence of their educational success (Bronfenbrenner, 1989). This perspective focused concern on other salient features that distinguish children's experiences. For example, the economy, parents' work, resources in school, and so on can be important. A major longitudinal study carried out by Galton et al. (2000) reports that over the last 20 years schools have increased the organization and planning of this transition stage, which has resulted in fewer children reporting anxiety over the move. Many young people now look forward and get excited about making new friends and learning new things once the move to secondary school has been completed. However, despite such positive findings other research has continued to conclude that many children still anticipate the transition to be a difficult, stressful and anxious time (Pratt and George, 2004).

The Independent Living Movement promoted disabled people's rights to organize their own services to support their full participation in society. Promoting inclusion is a key objective for learning architects and advanced technologies make this possible. The FIESTA transferable tools address teacher-training needs and create practical strategies to enhance student transition and integration. The three professional development modules are 15-hour courses with readings, exercises and school-based activities. The Managing Transition Work Pack is supplemented by designed modeules on disability awareness/inclusion, mentoring/learning supports and collaborative working. The capacity building and networking can be used for not just pupils with special needs but for all other pupils who may be particularly vulnerable during periods of transition. It also is of practical benefit for all professional working with transition, not simply educators. This raises issues of changing attitudes to innovative learning environments, creative staff development and engaged management support. Advanced technology constantly creates rich potential for new and better-informed learning environments.

Transition raises the question of how we connect concepts of child centered learning and pedagogic innovation that adopt participatory ways of thinking with concepts of inclusion that stress the need for children to experience full integration with mainstream education. Children and families require individualized information, guidance and supports on transition to promote effective and sustainable learning outcomes. The key contribution of the FIESTA

network is that there is a demonstrated need to develop a European transition framework for adoption and adaption by Member States and innovative education authorities – and that this need is matched to resources, materials, tools and learning modules that permit advanced professional expertise in addressing challenges and opportunities for meaningful inclusion for SEN pupils.

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Enhancing Manipulative Learning with Smart Objects

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Abstract: : This paper aims to introduce the general theme of developing and using innovative teaching/learning environments based on the harmonic integration of (a) Embodiment Cognition theoretical perspective; (b) recovering well known and traditional psycho-pedagogical practices (i.e. logical blocks, teaching tiles, handwriting); (c) using Smart Technologies (i.e. RFID/NFC sensors, augmented reality systems, intelligent interfaces, etc.); (d) developing Adaptive Tutoring Systems in order to support learners and teachers (or parents) actions. We describe our experiences in the framework of Block-Magic an EU funded international research project. In particular, we present the first prototype of Block Magic learning/teaching environment in which children and teachers interact with Logic Blocks enriched with RFID sensors and an Adaptive Tutoring System that support (enhance) learning/teaching process.. Moreover, we provide a trials description which are currently performed in Germany, Greece, Italy and Spain.

Keywords: Embodiment Cognition, Manipulative Learning, Smart Objects, RFID, Logic Blocks, Technology Enhanced Learning and Teaching

1 Introduction

Children know their living environment throughout the hands. Even if their sensory-motor functions and neuro-cognitive structures are not yet developed

they use the hands to understand how the world "works". For example, at the age of few months a child points something to guide an adult to bring an interesting object in his/her reaching distance; when the object is in own hands, he/she starts to handle, touch, and manipulate it trying to understand the object's features and functions.

More in general, the history of all sensory-motor interactions with external world appears to be one of the main factors of our psychological development and knowledge cognitive representations. It is not a new idea, eminent psychologists proposed and deeply discussed similar perspectives (see for example Piaget (1971). Recently, the theoretical approach of the "Embodiment Cognition" (Borghi & Cimatti, 210) has organized a relevant corpus of experiments, clinical observations, empirical studies, computational modeling (Ponticorvo, Miglino, 2010) in order to demonstrate how knowledge is captured in our neurocognitive structures as an holistic space-based sensory-motor representation (for example see the mirror neurons systems in planning and recognizing motor behaviors).

Of course, adult humans do not learn only by pointing, reaching, touching and manipulating. During the cognitive development and learning processes the "concrete" manipulative acts are gradually embedded and represented in our neurocognitive structures where they are performed as "simulated" actions (symbolic acts) in a virtual (mind) space (Frick & Newcombe, 2012). But the use of hands (or more in general, the body) coupled with a cognitive representation of the physical space are the latent and essential psychological biases of our learning/developmental processes. They strongly emerge when the environmental conditions invite us to use them. These biases are, probably, the main reasons why we think about Internet as a geometrical (virtual) space or why the "mouse" of the PCs and the "touch screens" are immediately intuitive. In fact, the mouse extends our "pointing" and "reaching" actions in the graphic space of a computer screen and the current "touch screen" technology allows us to manipulate digital virtual objects. Recently, new technologies are candidates to enhance our attitude to knowing by manipulating. Basically, they are composed by common objects equipped with sensors and connected in wireless mode with a remote computer. Users enter in this sort of Internet of Things and interact with the smart objects throughout new interfaces (glasses, gloves, visors, etc.) or by traditional manipulation interpreted by (sophisticated) computer programs (see for example handwriting recognition systems).

The autors think that the convergence of Embodiment Cognition Theory and the Smart Objects technology could produce innovative learning/teaching environments to enhance our neuro-cognitive development. Moreover, this alliance could recover traditional and well known psycho-pedagogical practices that are not widely and massively applied because of their expensiveness. For

example, it is the case of educational materials like Logic Blocks or Teaching Tiles. These are manipulative learning environments designed to teach a wide range of subjects (mathematics, geometry, languages, geography, etc.) and abilities (or soft skills) (problem solving, creative thinking, cooperative behavior, etc.) for children between 3 to 10 years old. Unfortunately, this type of material could be used individually or in small groups of students (3-4 children maximum) and requires a constant supervision by an adult (teacher, parent, educator, etc.). This is a strong constrain for their massive utilization. As above said, we think that the emerging field of smart technologies (software and hardware) could be addressed to overcome this constrain.

This paper aims to introduce the general theme of developing and using innovative teaching/learning environments based on the harmonic integration of (a) Embodiment Cognition theoretical perspective; (b) recovering well known and traditional psycho-pedagogical practices (i.e. logical blocks, teaching tiles, handwriting); (c) using Smart Technologies (i.e. RFID/NFC sensors, augmented reality systems, intelligent interfaces, etc.); (d) developing Adaptive Tutoring Systems in order to support learners and teachers (or parents) actions. We describe our experiences in the framework of Block-Magic an international research project funded by EU (Comenius Program). In particular, we discuss initial results of Block Magic learning/teaching environment in which children and teachers interact with Logic Blocks enriched with RFID sensors and an Adaptive Tutoring System that support and enhance learning/teaching process.

2   The Logic Block learning-teaching environment

Block Magic is a training system that integrates traditional logic blocks (a structured material composed of 48 pieces organized in 4 categories: a) color - red, yellow, blue; b) shape - square, circle, triangle, rectangle; c) thickness - thick, thin and d) size - small, big. These blocks are enhanced technologically with RFID sensors, a sensible board and smart software that can interact with the space and the users. Block Magic teaching methodology involves "active" and learner-centered approach focusing on students' actions and not on the transmission of knowledge.

The goal of Block Magic is to introduce a new teaching methodology and technology targeting young children between the ages of 2.5 and 7 who are attending pre-school or the early years of primary school. The overarching goal is to help young learners to learn autonomously. This, the authors believe, is a basic life-skill, of critical importance for children future development. Block Magic

provides an attractive and highly motivating approach to teaching skills which will be important for learners in later life. In other words, Block Magic aims to support the acquisition of life skills in young children and is expected to be highly efficient also in cases where alternative teaching methods may be less effective.

Block Magic learning activities promote the development of creative, mathematical, logical, language, strategic and social skills in normal children and in children with special needs. Block Magic encourages autonomous, explorative learning, group communication and group problem solving. The methodology proposed in the project is designed in such a way as to encourage a progressive and steady process of learning and knowledge enrichment throughout the school year. The training methodology developed for the project defines two usage scenarios: 1) Individual Game Scenario and 2) Social Game Scenario. Most of the skills targeted by Block Magic, such as mathematical, logical, strategic, and creative or language skills, can be taught both individually and in group, while the "social skill" can only emerge under conditions of group play.

The main task of the teacher is the definition of educational objectives to be achieved, both on a collective level, i.e. by the whole class, and by the individuals, i.e. by each child. The correct identification of these objectives will allow the teacher to define and customize the training. At the operational level, the role of the teacher is to prepare the room, the Block Magic tools and the children for the Block Magic session. Furthermore, the role of the teacher will be different in the two scenario: while in the individual scenario the teacher can merely act as an observer; in the second scenario the teacher plays a central role, linked to the need to integrate the results obtained in the game with behavioral observations, aimed at identification of the weaknesses and the potential of the involved children. The roles could include providing support, observation, creating obstacle, etc. based on the characteristics of the specific exercises. The main aspect in the group scenario is that the educator collects information about the group interaction and the specific competences required, such as team building, the leadership, verbal and non-verbal communication.

Initially, the teacher should familiarize the participating children with the magic blocks and the magic tablet. Some time for free play with the blocks could be allowed in which the kids will observe the blocks and get initial feeling about their properties.

In the beginning of each session, the teacher might set or modify the educational objectives for the child. For example, if the teacher notices from the analysis of the collected data that a child is mostly lacking mathematical or logical skills, which normally are the most difficult, he/she might set the software to select more exercises for these skills at the expense of exercises targeting creative or language skills. If, however, most of the children in the class have difficulty in

integration (e.g. in classes with a high number of immigrants) the teacher may decide to perform a larger number of game sessions of a group type. In each session, the teacher can use one of the two scenarios of use, i.e. the individual or the group one, depending on the targeted skills.

3   Enhancing Logic Block with smart technologies: the Block-Magic Platform

Block Magic is centered on the concept of a magic block, an "intelligent" version of the "attribute blocks" or "logical blocks" and "teaching tiles" already familiar to teachers as described in the previous section. The Block Magic teaching kit consists of a set of magic blocks, a magic board/tablet device, specific software and a teacher's manual specifying learning activities. Block Magic uses a set of 48 and combines the traditional tiles with a low-cost RFID technology (Radio-frequency identification). Each magic block will have an integrated/attached passive RFID sensor through which the block is identified wirelessly. A specially designed wireless RFID reader device, an active board, is used which have the ability to read the RFID of a block and transmit the result to the Block Magic software engine. The "intelligent" software engine receives input from the wand and generates an "action". The software is able to personalize the formative path of the learner based on usage data collected during exercises, and a usage manual which specifies learning activities and educational scenarios to be used by the teachers.

Block Magic training kit is based on the use of "active" technique of teaching, i.e. procedural activities that involve students actively in the learning process, taking place through the interaction between the child and the software and with other children through the object manipulation and exploration of the space.

Therefore, during the active training, the activities proposed in Block Magic produce direct effects on the learners; a short and not complete list is proposed below:

- Allow concrete manipulation;
- Cause a cognitive "advancement" by putting the old knowledge in crisis, something new will be discovered;
- Place a proper distance, i.e. the new knowledge/discovery should be neither too close nor too far from what is known;

- Provide metaphorical meanings, i.e. it should allow varying and diverse experiences;
- Stimulate the relationship between student and the knowledge.

Based on these assumptions, Block Magic offers to the learner training activities, active participation in the knowledge acquisition and the development of other skills that are hard to mature through more traditional methods. Block Magic training kit methodology is functional and effective even with small children and/or children with special needs, regardless of the structural problems and/or school organizational space in which training takes place.

4 Trial Settings

The methods, exercises and technologies developed in this work were tested in a small scale with selected children and teachers in Greece, Germany, Italy and Spain in kindergartens and primary schools. In particular, the trial involved 7 different schools, 12 teachers and 59 students including 4 children with special needs. The researchers supervised the sessions conducting 84 observations. After the sessions researcher performed focus groups with teacher involved in the trials. The observations and the expert interviews focused on three main aspects: usefulness, satisfaction and accessibility. A large scale trial is scheduled in the spring 2013.

The trials were made in a room, separate from the classroom where normally the school activities are performed. The room provided a large table where the Block Magic kit could be freely placed and manipulated. Children and teachers could sit or stand around the table and the observers could move freely around. All sessions were attended by a teacher, who was already familiar to the Block Magic system. The teacher guided the students in the beginning of the session and provided support whenever needed. Evaluation sessions with children continued between 30 min and 1 hour. Children were allowed to play the exercises they want (i.e. no predefined set of exercises was set). The Block Magic system allows the selection of exercises by physically selecting a block with a specific shape (i.e. circle, square, rectangle or triangle). Block Magic allows two different types of scenario: a) Social scenario and b) Individual scenario. In the social scenario the children solve the exercise in team composed by 3 / 4 pupils. In the Individual scenario, the child plays with Block Magic autonomously. The

number of exercises played was also not set in advance. After the classroom-test, the researchers performed interviews the teachers involved in the trial in order to figure out the benefits, the problems and the limitations of Magic Block.

5   Initial results

The observations showed that the Block Magic prototype is effective and the exercises have in general an acceptable level of difficulty. The performance of the children differed in the amount of mistakes, and the successfully solving of the exercise depended on the level of difficulty of the exercises. Through the different exercises with varied levels of difficulty Block Magic enables children to learn concerning their individual developmental state. Nevertheless the formative evaluation showed several aspects to be improved, especially the reduction of software bugs and the improvement of the aural feedbacks.

Regarding the usefulness of Block Magic, the observation showed the motivation to learn with the teaching tool was strongly stimulated. The children were excited and learned with fun using the learning tool.

Within the individual scenario the teaching tool allows to learn autonomously. However the observations showed this is very difficult for 3 and 4 years old children play autonomously because they need further hints and support by the teacher. After knowing the teaching tool, the pupils are able to follow the instructions and the feedbacks from the software with rarely help by the teacher.

In the opinion of the teachers, Block Magic could be considered as a tool that is able to improve the skills of the children. The majority of teacher considers that Block Magic can stimulate especially the logical and mathematical skills.

Regarding the satisfaction of the children the trial showed excellent results. Almost all children liked to learn / play with Block Magic and after the end of the session they would like to use the teaching tool again. The children respond very positively to the kit and were very excited playing with it. In the opinion of the teachers they benefit from the integration of the teaching tool into your classroom routines, especially within the individual training.

Regarding the accessibility the results already show the teaching kit is in generally appropriate for all age-groups of the target groups of children. Concerning the special needs of children with disabilities the project team developed close together with teachers of disable students in order to adapt version of Block Magic for blind users and children with mental diseases. The results show that Block Magic was accepted of students with disabilities. The children respond very positive and they were highly motivated. Nevertheless the teachers recommend several improvements. They recommend substituting the

actual voices with voices of parents of children. Additionally the teachers proposed to revise the interface of Block Magic because colors with high contrast are important for children with special needs. Within the tests a first learning curve of the children solving exercises appeared. After repetition of the use of Block Magic or repeated solving of exercises the children seemed to perform better e.g. need less help by the teacher and solved the exercise within less time. These results achieved in the trial encouraged to explore the potentialities of Block Magic in the next phases.

6 Acknowledgments

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Co-Create the Knowledge Media of the Future

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Abstract: This paper describes Education21 (Onderwijs21), the Professional Development School Network in the Northern region of the Netherlands. The goal of the project 'Education21' is to develop in a co-creation context the education of the 21st century. We did choose for the Professional Development School Network approach. This network consists of primary schools, secondary schools, teacher education institutes and education professionals. Main goals of the network are improving the successful use of knowledge media in education, continuing professionalization and the school communication for instance with parents. Education21 is part of the EU Open Discovery Space and Transit project.

Keywords: learning organization, educational improvements, knowledge media, co-innovation

Introduction

There is a continuous focus worldwide on the quality of education and its alignment with technological and socio-economical changes (Merkt et al., 2007; Townsend & Avalos, 2007). It is not only significant to update educational paradigms and tools, enable technology based learning, but also to respond properly to the ever more demanding student, teacher and parent needs. An effective solution to incorporate student, teacher and parent needs into curriculum is by developing a community-oriented support service and environment. These environments allow users (i.e. teacher, student and parents) to have their own views over the content base and help to improve the knowledge media developed in these communities. This research takes place

within the context of Education21 and is connected to the European Open Discovery Space (ODS) and the related Transit project where students, teachers and parents collaboratively work on the creation of new educational knowledge media. The ODS-project is a result from 51 organizations in 21 European countries. The aim is to create a socially-powered, multilingual open learning infrastructure to boost the adaptation of eLearning Resources in Europe. This infrastructure triggers schools to collaboratively develop new or improved knowledge media, without cultural and linguistic barriers. The degree of involvement of the three stakeholder groups largely depends on the added value that can be offered (Zhao & Kuh, 2004). Students, teachers and parents will not participate if they have no motives to do this. The increasing knowledge needed to practise as a professional, and the accelerating rate of change within the discipline suggest that traditional learning models may not be address the requirements of learners (Armarego & Clarke, 2005). Professional Development School Networks (PDSN) are needed to meet the everchanging educational structure and content. We suppose that these Professional Development School Networks improve the educational structure and quality, by using a problem-based design approach. In this study, we will give an account of the value of PDSN in the context of educational knowledge platform 'Education21'.

Professional Development School Network

The concept of PDSN originates in the USA, and the analogy in the UK is "school based teacher education". PDSN refers to collaboration between a school and a higher educational institution wherein the professional development of teachers is supported by specific conditions (Bergen, 2006). We define a professional development school as a knowledge network between a higher educational institution ("preparing school") and primary, secondary or professional schools ("receiving school") with a common goal to educate students to become professional teachers and to develop new or improved knowledge media. This new structure requires regular communication between preparing and receiving schools and leads to shared responsibilities in teacher education. We limit ourselves to the case study Education21 (Dutch: Onderwijs21), which is the knowledge network between primary and secondary schools and higher educational institutions in the Northern region of The Netherlands.

Furthermore, PDSN is based on a work-learning integrated curriculum where practice is combined with theory and reflection. For example, portfolio assignments from the higher educational institution provide instructions about

how to design and implement a lesson, which are immediately tested and then discussed with a mentor. Thus, practice and theory are more integrated. The basic assumption is that by incorporating an out-of-school curriculum, students should be better prepared for their professional life (Popeijus et al., 2006). On the other hand, the integrated curriculum should be more enjoyable and attract more students (Roelofs, 2003; Bergen, 2006; Korthagen & Vasalos, 2007). A third assumption is the fact that it improves the collaboratively work on new or improved knowledge media. In such a way, both the quality of education and the educational demand-supply principle can be improved (Bergen, 2006).

Finally, the overall goal of PDSN is continuous educational quality improvement (Bergen, 2006). Continuous quality improvement is being enabled by the implementation of the learning organization concept (Harrisson & Kessels, 2004; Watkins & Marsick, 2004; 1993; Walton, 1999). Furthermore, it has long been recognized that educational institutions need to become more flexible and more open to new ideas. However, hierarchical structures and closed power cultures are the main obstacles (Harrison & Kessels, 2004). A strategy to decrease top-down decision making and ensure high quality education is the development of a learning organization (Harrison & Kessels, 2004; Bergen, 2006; Popeijus et al., 2006). There seems to be empirical evidence about the link between learning organization and school performance results (Hofman et al., 2008), Education21 (Image 1) is developed in order to empirically test the value of professional development school networks, also called as learning networks, on school performance results. Within the PDSN problem-based learning design approaches are other work-learning example used. Collaborative problem-based learning motivates students to learn thinking strategies, domain knowledge and to enhance critical thinking (Gokhale, 1995). The problem-based learning design approach is an instructional method in which students learn through facilitated problem solving. This approach gives students the possibility to work in student learning centers on a complex problem that does not have a single correct answer (Hmelo-Silver, 2004). Problem-based learning is a method that uses the involvement of students, teachers, parents and other stakeholders. One of the main characteristics of this problem-based solution approach is co-creation. According to Sanders & Stappers (2008) co-creation refers to any act of collective creativity, i.e. creativity that is shared by two or more people.

Image 1: Expertise Center Onderwijs21

Co-Creation

Education21 is a small part of the European project Open Discovery Space (ODS). It is the Dutch education learning network of the bigger European ODS-network. ODS addresses various challenges that face the eLearning environment in the European context. The interface has been co-created with students, teachers, parents and policy makers in both preparing schools and receiving schools. But within the project the knowledge media will also be co-created with educational stakeholders. ODS will fulfil three principal objectives. Firstly, it will empower stakeholders through a single, integrated access point for eLearning resources from dispersed educational repositories. Secondly, it engages stakeholders in the production of meaningful educational activities by using a social-network style multilingual portal, offering eLearning resources as well as services for the production of educational activities. Thirdly, it will assess the impact of the new educational activities, which could serve as a prototype to be adopted by stakeholders in school education. As the Dutch part of ODS we created a professional development school network with educational institutions in the northern region of The Netherlands in order to collaboratively produce and share new or improved knowledge media.

Within PDSN we also use the work-learning integrated principle in combination with the problem-based learning design approach; this design approach is mainly

based on current problematic media literacy issues in education like social media behavior of students and the use of tablets for educational purposes. Many schools in The Netherlands experience problems with handling tablet-computers for educational purposes. The schools have problems with adding value to education, using the tablet computers, by co-creating with educational stakeholders they can come with solutions for the 'tablet problems'. Another problem the schools perceive is the question: how to protect students from the dangers that arise within the social media? There is no single solution for this problem; each problematic situation requires another solution. But in collaboration with other stakeholders in a network, schools can co-create a solution that has shared acceptance (Lorenzo et al, 2006) of all involved individuals and often has practical evidence of the value at other schools. The knowledge media arising from these co-creation initiatives are reported within the Education21 platform.

Based on these common problems and the way co-creation can solve these problems, an educational learning network can be created in order to collaboratively find answers to the problems. One of the main goals of ODS is "stimulating demand for innovative eLearning resources, by delivering a European-wide, socially-powered multilingual Web portal that allow teachers, students and parents to intuitively discover, acquire, share, discuss, reuse and revise digital educational reseources that are available through this virtual pan-European infrastructure". This infrastructure can facilitate as a platform for students, teachers and parents to collaboratively develop an adequate answers to existing problems and to test if knowledge media in other countries also work in The Netherlands. Within this platform parents and teachers can for example interact in order to find a solution for the problems they perceive with their children on social media. Solutions with a broad support can than be shared through the platform with other educational institutions where – possibly – the same problems occur.

Summary

The development of professional development school networks largely depends of the way it is constructed. We expect that a work-learning integrated curriculum in combination with a problem-based learning design can be the basis for expanding education learning networks and improve the quality of knowledge media. Solutions to common problems are often of great importance for many people, for that reason we created a large educational online e-learning network

(Education21) where all educational stakeholders can collaboratively co-create to find solutions for existing problems and share these solutions with others. One example of a theme that is important for many educational institutions is media literacy. In recent years, schools are increasingly being overtaken by new technologies and behavioural changes resulting therefrom. Collaborative innovation in educational learning networks can be the basis for finding a context-specific answer to these media literacy problems and should be the main method to develop future knowledge media. Future research should be focused on empirical testing the educational value of Education21, the professional development school network in The Netherlands.

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Innovation Pedagogy in Boosting Innovation Competencies in Higher Education

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Abstract: Innovation Pedagogy is a learning approach aiming at enhancing students' innovation competencies. The core of Innovation Pedagogy lies in emphasizing interactive dialogue between the educational organizations, students and surrounding working life; Innovation Pedagogy puts the key elements of the knowledge triangle into the practice. The social aspects of working and learning are emphasized, and processes where learning happens in multidisciplinary teams form an essential part of the whole process of learning. We in Turku University of Applied Sciences have developed special active learning methods to produce new professionals who are capable to participate in diverse innovation processes. Each single method has its own profile and place in students' path in Higher Education studies. In addition, the Innovation Competencies Barometer ICB is a novel tool to assess the effects of our education to students' innovation competencies. ICB can be adopted in all educational organizations aiming at measuring innovation competencies –related learning outcomes.

Keywords: Innovation Pedagogy, Innovation competencies, learning outcomes, knowledge triangle

1 Introduction

Recent studies show that the ways how work is done will undergo big changes in the near future. We understand that the nature of future work can be studied using two dimensions: one of them is related to the goal of work (end result) and the other in work methods. Using this kind of classification we can distinguish the following types of work: 1) work where both the goal of work and the methods used to reach it have both been pre-determined; 2) work where methods have been agreed upon but the final goal is open or unknown; 3) work where the goal

has been defined but the methods and ways to reach the goal and the way the work is done are not carved in stone; 4) "not-by-the-book" work where both the goal and methods of work are open; the desired end result is clarified or determined as the work is being done. It can be anticipated that the amount of people engaging in the work under categories 3 and even 4 is increasing. This requires new skills from university graduates and it becomes necessary to develop not only one's individual competences but even more importantly to realize that competences are actually built in relation to others and used as part of a whole. Fewer and fewer jobs are done in isolation. Working life is based on teams that work together to solve a problem or to create something new. [11]

Innovation pedagogy is defined as "a learning approach that defines in a new way how knowledge is assimilated, produced and used in a manner that can create innovations". [1][2] It contributes to the development of new generation of professionals whose conceptions of producing, adopting and utilizing knowledge make innovative thinking and creating added value possible. [2][3]

The aim of this paper is to introduce the innovation competences set as an aim for innovation pedagogy and show some examples of how these competencies can be reached and measured. We present some examples of active learning and teahing methods used in innovation pedagogy and explain some new openings in the university when trying to reach the desired innovation competencies.

2 Aiming for innovation competencies

The ultimate aim of innovation pedagogy is to reach the final learning outcomes which are related to the competencies possessed by the students when entering working life once having completed their degrees. The aim of the whole educational process is to equip students with the core competencies of their own subject matter and in addition to that also prepare them to become active contributors in the different innovation processes they are facing when working as entrepreneurs or employees. To reach this goal it becomes essential to define the desired goals, knowledge, skills and attitudes, which refer to the learning outcomes related with the capability of being able to act innovatively. These learning outcomes are called innovation competencies. One of the important tasks of any educational institution is to define, develop and implement the correct methods to be used in education. To succeed in this development work requires joint effort with the faculty members, students and working life.

An innovative individual forms the base for any innovation activities to take place. Innovativeness at individual level usually demonstrates itself as creativeness. But in many cases this is not enough, instead the idea needs to be examined by other

creative individuals who get the chance to contribute and develop it further. In this phase the further development of future innovations calls for interpersonal competences in the participating individuals. After interpersonal examination the next level is to connect to the existing networks of the individuals involved. In order to reach successful results a well working network and competencies to operate in the network are needed. Flowing information and knowledge are needed when creating learning in the organization and organizational learning in many cases is an antecedent of innovational behavior.[1][2]

Learning outcomes are statements which are used to describe specifically what is expected from a learner in form of understanding, knowledge and know-how at the end of a certain period of learning. They are broad statements of what is achieved and assessed at the end of the course of study. [4][5] They represent an approach to education in which decisions about the curriculum are driven by the outcomes the students should display by the end of the course. In outcome-based education, product defines process. The curriculum is being developed from the outcomes the students are wanted to demonstrate rather than writing objectives for the curriculum which already exists. A learning outcome is a written statement of intended and /or desired outcome to be manifested by student performance. [5][6][7] Guidelines for defining learning outcomes recommend that they should be clearly observable and measurable [5].

Innovation competencies are the learning outcomes which refer to knowledge, skills and attitudes needed for the innovation activities to be successful. The methods applied and the way how teachers and students interact constitute a base for learning and thus enable the forming of innovation competencies. The methods used also facilitate intuitive and unexpected learning during the learning process and make transmitting of tacit knowledge possible when dealing with working life. In innovation pedagogy this kind of learning outcomes can manifest them in the form of intuitive and tacit learning which takes place in the learning situation. They can be f.ex. experiences about cultural differences, about working at customer surface etc. The core idea in innovation pedagogy is to bridge the gap between the educational context and working life. Learning and teaching processes are developed so that they provide improved competences for the students and enable personal and professional growth. Learning is deeper when the previously gained knowledge is continuously applied in practical contexts.

Innovation competencies are learned gradually as new information is added to our knowledge structures. Knowledge acquisition and application are critical components in this process. Thus, creating new services, products and organizational or social innovations – new added value – requires both knowledge and skills, which are applied in an innovation process. [8][9]

Innovation can be defined in many ways. In the context of innovation pedagogy innovation is understood as the process of constantly improving knowledge, which leads to new ideas, further knowledge or other practices applicable in working life. [2] Innovations are best born in a special culture which includes freedom to think, equality and brotherhood.

Innovation pedagogy contributes to the development of new generation of professionals whose conceptions of producing; adopting and utilizing knowledge make innovative thinking and creating added value possible. [2][3] The core idea in the application of innovation pedagogy is to bridge the gap between the educational context and working life. Learning and teaching processes are developed so that they provide improved competences for the students and enable personal and professional growth. Learning is deeper when the previously gained knowledge is continuously applied in practical contexts.

3   Active learning and teaching methods in Innovation Pedagogy

In working life the way of working includes that problems are solved and innovations are created in groups and networks. However, in universities the students typically study by individual reading and memorising lectures. Collaboration in learning is not appreciated and sometimes even forbidden. Educational research has noted the transfer problem where learning cannot often be recalled and applied in working life. The transfer problem is recognized: the learning in one type of setting is not accessible when the learner is moved to another setting. This problem can be, at least in part, avoided by creating identical elements in education and working life. [13]

According to the aims of Innovation Pedagogy different methods must be developed so that the cornerstones of Innovation Pedagogy can be found in the learning environment. Those methods should contribute especially to the development or student's interpersonal and networking competencies. The cornerstones include cross-disciplinary environment, research and development activities executed by a big amount of students, flexible curricula, concentration of acknowlidging the importance of entrepreneurship and service production and internationalization in the level of reserch, development and student engagement. [1][3][12]

In Turku University of Applied Sciences TUAS we have developed several active learning and teaching methods and these can be seen as tools under the umbrella of Educational Research, Development and Innovation Methods (ERDIM). The aim of these learning methods is to combine real life assingments,

peer councelling and working in cross-disciplinary groups including the international aspect in all work.

RDI projects carried out together with external operators and undertakings funded from external sources are an excellent way to enhance cooperation with the working life parners and an increasing amount of work can be conducted in the projects by the students. Thus the ability for independent and responsible working methods as well as the mastery of the basics of project work is expected of the students throughout their studies. [12]

The most typical ERDIM tools are different types of hatcheries. Hatchery is basically a multidisciplinary group of students which is working under the guidance of teachers, RDI personnel and more experienced students of our university. The principle of carrying out the work in different hatcheries is approximately the same but the expertise level of student varies in the different hatchery types. A first year student is capable of handling less complicated assignments requiering not so much expertice whereas a third year student has much more content, often individual, knowledge to be used when participating in the hatchery work.

When Innovation Pedagogy is applied, it is essential to give the students several opportunities to engage themselves in different kinds of hatcheries during their studies. Junior Project Hatchery forms the base and introduces the capabilities needed for this type of studying and working. After that it is up to the student to choose between different available options. In our Faculty of Technology, Environment and Business all first year students (appr. 500 students/year) participate in compulsory Junior Project Hatchery studies starting at the very beginning of their studies.

The Research Hatchery is meant for the students who have completed their basic studies and, as a result, are familiar with the basic methods in the field and have thus reached an appropriate level of general knowledge on the topics of the more advanced hatchery. The students may also have experience of project activities when they get involved with the Research Hatchery.[12] Research Hatchery is essentially content-orientated. In other words, the targeted learning outcomes relate to the subject matter itself. The difference between the Research Hatchery and the Junior Project Hatchery is at its greatest in this context; in Junior Project Hatcheries the orientation is towards methods and innovation competencies rather than contents. Working within the conceptual sphere of the Junior Project Hatchery and gaining methodological skills helps when producing content in the Research Hatchery.

A student can participate in a Research Hatchery several times during the studies and move from less complicated tasks to more complicated ones as the studies progress. Hatcheries bring the working life problems to the university to be

solved by the students. They offer a great and easy accesspoint to the surrounding environment and make it possible for the students to start building networks with working life partners already during their studies.

4 New openings

In addition to the implementation and development work related to the Hatcheries, more effort is put also to the cooperation and synergy between different levels of education and training. Also, more focus should be set to develop new forms to assess learning outcomes.

One of the pilot projects – with the financial support from European Commission – focuses on creating a new cooperation model between Higher Education, Vocational Training, Adult Education, Upper Secondary Education and companies in the area of new technology. In the fields of new technology education too many drop-outs are still caused by wrong study field choices. The main reason is the lack of knowledge concerning the studies after secondary school and occupational work profiles. New methods to inform the students on study and job opportunities are needed. Also the demands on the competencies related to the employment of young persons are rapidly changing. The competencies developed during their studies must be based on recent observations of the business life. This calls for active cooperation with the companies in the planning, implementation and assessment of education. Our pilot project offers a new approach to improve the employment prospects of young persons. The new working model for cooperation between different levels will increase the knowledge of both students and teachers on the educational opportunities and occupational job profiles in the fields of new technologies. In the project, the Machine Technology Center of Turku will become a strategic learning environment where all the educational levels of the Turku area can cooperate with each other, as well as the business life. The working model to be developed in the project will in the future serve as an encouraging example for both national and international actors.

Another project coordinated by TUAS is at the moment is related to the development of an assessment tool which is used to get evidence about student learning when new methods are being used in instruction. The first version of the tool should be in use before the end of 2013. The new tool, the Innovation Competencies Barometer (ICB), will measure changes in students' innovation competencies and therefore show the added value of selected teaching and learning methods and processes. It takes along all main stakeholders to the evaluation process; students will make self-evaluation, co-students carry out

peer evaluation and teachers are responsible for expert level analysis. The ICB also makes possible to involve experts outside of the higher educational organizations more actively to the pedagogical development processes. When using the ICB, the role of company representatives includes assessing the performance of students during the execution of education. This gives more value for the whole teaching and learning process. ICB differs from other leading tools related to the same theme (e.g. The Collegiate Learning Assessment CLA, developed in USA) by concentrating in assessing behavior while other tools are mainly based on written tests.

5 Discussion

Because of the centuries-old tradition in Higher Education to use lectures as a main teaching and learning method, we have a long and winding road to go to make changes. However, we are convinced on the necessity and also our chances to modernize the existing pedagogical climate to better meet the expectations and requirements of working life. The ICB presently under construction will hopefully be a tool needed when proofing the efficiency of new methods when developing student's innovation competencies.

New ways of involving working life to participate in the planning and execution of education are needed. It is essentially important to be able to meet the needs of the changing environment when educating young people. Only when also the future needs of the working life are met will the educational institutions have met their goals.

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Quality assurance of higher education: National trends of development and accreditation in Kazakhstan

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Abstract: The article deals with current trends of development of quality issues in higher education. Due to the introduction of latest educational strategies in Kazakhstan higher educational institutions have to develop its quality assurance and develop change management system in order to know how to coup with reforms. Accreditation is considered as one of the most effective instruments of measuring quality. Accreditation criteria and requirements can be taken for creation systems for building internal quality. Current educational standards have to be replaced by national quality standards

Keywords: international developments, change management, quality assurance, accreditation, quality standards.

1 Introduction

Recent international developments, including entering of Kazakhstan into international educational space determine the aims and main emphasis for higher education policy due to new challenges. The introduction of a market economy is a precondition for reconsidering the content of higher education. Curricula and their content have to be reviewed from the perspective of best world practice, strengths and weaknesses of research, compared to institutions worldwide, are to be analyzed and the necessary strategies for an increasingly intensive completion are to be created.

It is a predominant task for institutions of higher education to develop, in accordance with their respective responsibilities, the necessary measures so as to ensure and improve the quality of research and academic teaching.

The individual desire to study in Kazakhstan is increasing and this tendency is strengthened by increasing demands in the job market for a labour force with

higher qualifications. It can be assumed that Kazakhstan with the population of 16 698 mln people up to the year 2012 have 629 507 thousand students of higher education institutions and 7790 of schoolchildren. The educational market has dramatically changed and requirements to the quality of graduates have been increased so that the job market requires very well trained graduates in specialized professional areas, and the market itself in its turn have become very integrated.

So these problems and their solutions require development of quality standards applying to issues of scope, structure and contents in the areas of educational programs, training and research. It has to bring about decisions on the key parameters for contemporary policies of higher educational institutions aimed at improvement and development of its quality.

2 Strategic policy

Currently, the education system of our country, as well as in the whole world, actualized the issue of quality of education. Quality is traditionally perceived as an abstract category (currently there are over 2,000 definitions of quality), but the current policy of education, particularly educational strategies of different education systems of the world are trying to determine a practical *mechanism* for achieving quality, identify *methods* for measuring the quality and use of specific *tools* of measuring quality of education.

Change is an ever-present feature of organizational life, both at the operational and strategic level. Therefore, in any organization it is important to know how to manage the changes required. Change management as defined by Moran and Brightman[19] is the "process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers". In the Message of President Nazarbayev to the People of Kazakhstan in 2012 under the motto: "Socio-economic modernization, the main vector of development of Kazakhstan"[20], the state has been formulated strategic objective, which must continue to modernize the system of education started earlier and to ensure qualitative growth of human capital in Kazakhstan. Continue to work to ensure the current level of education, training competitive

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[19] Moran, J.W. and B.K. Brightman (2001), *"Leading Organizational Change"*, Career Development International, vol.6, no.2, pp. 111-118.

[20] Message from the President of the Republic of Kazakhstan Nursultan Nazarbayev of Kazakhstan. 28.01.2012 "*Build the future together*" http://www.akorda.kz

professionals and provide qualitative educational services based on international standards, recognized by educational institutions and professional associations. The task for engineering higher educational institutions is a continuation of the work set by the President of the country to train specialists with engineering education of a new generation, with modern thinking and correspondence to the relevant requirements of a labor market[21].

The analysis of international practice shows that every HEI is doing diverse and extensive work on QA around the world. In general, the world practices put a student at the center and students' survey is considered as the key factor in university development. Western universities have strong relationships with employers that can also provide information on quality of graduates. It is also important to note the role of each teacher who is looking for ways to self-improvement of quality of courses, introduction of new innovative strategies in teaching. Universities of the world take educational programs through evaluation of professional associations, where the university receives recognition on the quality of programs and gets feedback on the quality of graduates from employers.

Evaluation and internal monitoring processes are vital to the ongoing improvement of the education provided by institutions. Quality depends not only on measurement instruments and tools, but also on order to safeguard excellence, institutions need a well designed quality assessment tool. The best way to ensure quality is to develop a system of internal quality control and external assessment by peers. Improper management of the change process can cause resistance to innovative assessment practices. To minimize this occurrence, evaluation and monitoring of the change process is essential[22.]

3   Quality through accreditation

While taking educational programs through accreditation, both components, organizational processes and institutional elements may affect the quality of educational programs. From this perspective, the quality of higher education

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[21] Message from the President of the Republic of Kazakhstan Nursultan Nazarbayev of Kazakhstan. January 29, 2010."*A new decade, new economic growth, new opportunities*" (http://www.akorda.kz)

[22] Burnmi S. Malau-Aduli, Craig Zimitat and Aduli E.O. Malau-Aduli (2011) "Quality Assured Assessment processes: evaluating staff response to change", *Journal of Higher Education Management and Policy*, vol.23, no.1,pp.105-120

institution with all its components and activities, representing a very complex process depends on the actors involved and the stakeholders in the educational program. The contribution of each member within the institution and the external environment also determines the quality, where the quality of results of the educational process can also be measured by the successful achievement of graduates after they join the professional environment.

Thus, the accreditation assessment defines the logics and effectiveness of the educational process, starting from the formation of its tasks, the implementation of these tasks, which play an important role in the accreditation, including its strategic objectives, priorities and degree of integration of the results into the society.

The very process of preparing for accreditation effectively helps to analyze the university, to carry out an internal self-assessment in accordance with the requirements for assessing the quality of educational programs. This practice has an effective influence on the critical review of existing educational programs of the University and provides an opportunity for dramatic qualitative changes and to improve compliance with current requirements of HEIs.

Accreditation in the field of education is used to *recognize and validate the quality of* educational programs, as one of the most modern tools to measure the quality.

To implement the accreditation the accrediting organization must be accredited by associative bodies that give them a right to conduct an accreditation review in educational institutions. The panel must include representatives from the professional communities that assess the presence and level of professional competence of students.

It should be understood that accreditation is not rating. This is a tool that makes it possible to measure quality and assess for evidence of programs quality that meet required standards, which are set by associative professional bodies, composed of representatives from academic and professional institutions.

Most quality assurance agencies in Europe and the U.S. are non-governmental, non-profit organizations, educational institutions are founded on a voluntary basis.

At present, the need for accreditation of educational programs and institutional assessment in international agencies justified by the fact that Kazakhstan's higher education institutions must meet the quality standards set by international *professional* societies. This makes it possible to provide quality in accordance with the requirements of the labor market.

To do this, universities need to establish close links with industry. Curriculum should be developed in conjunction with professionals from industry.

In order to develop a system that ensures quality assurance, it is necessary to develop culture *of quality* that involves active participation of all professionals from academic community in quality, critically perceive self-esteem, responsibility for the quality of professionals at every level and sector, providing objective feedback ties and reactions, desire to share good practice and improvement of management of the whole process of university activities[23].

Kazakhstan's education strategy is trying to adequately respond to modern challenges in education by taking universities through international accreditation. In the process of accreditation higher educational institutions of Kazakhstan, on the example of international practice study in detail the operation of quality assurance systems for various HEIs where the system of internal and external evaluation of educational programs makes it possible to recognize the quality of the university. Analysis of international experience in quality and requirements for accreditation give the university an opportunity to critically examine and review degree programs and use them to update and upgrade, and thus improve the system of training in general. There are number of ongoing projects related to quality assurance and accreditation within Tempus as DOQUP[24] and CANQA[25] that may effectively help to enhance quality and international recognition of HEIs of Kazakhstan on global level.

The accreditation assessment conducted by agencies is not an *inspection,* but it *assists in improving the quality of* university programs or activities institutionally. Accreditation or recognition of quality of educational programs or institutional evaluation requires quality *assurance, support and development systems*.

The concept of quality assurance in higher education may be the scientific and theoretical, methodological vision, defining goals and objectives, structure, content and key strategic tools of its development as one of the key components to improve the quality of education.

The concept involves the transformation of not only quality education but also develop a system for monitoring and improving quality through critical analysis and recommendations for further improvement. The purpose is to give flexibility and adaptability of the learning process and methods for assessing the quality of students' knowledge in accordance with the requirements of the labour market, bringing the training system in line with the direction and dynamics of social and professional activities of the future specialist.

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[24] Tempus project DOQUP http://tempus-doqup.unige.it/project-description

[25] Tempus project CANQA http://www.emu.kz/en/info/news/6269/

4 Conclusion

The main purpose of higher education at present stage is to prepare highly qualified specialists with good fundamentals in different fields and practical skills that would enable them to compete in the labor market.

In world practice, the system of quality assurance includes the assessment of university management, quality of each educational programs in accordance with the requirements of the market, each teacher has their own search for ways to improve the program, defines innovative teaching strategies. Quality of education also requires creation of new quality control system where the teacher and the student would have been an active part of the system.

Kazakhstan is still following *state overall educational standards*. Due to the change of the market, these standards have to be changed to the next phase of its development, and therefore it is recommended to introduce *standards of quality.* The challenges of modern higher education institutions require adequate reaction, which, above all, is defined by the labor market. Universities should create a modernized model of training, study international practice and introduce modern technologies of quality.

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Evaluating the training provided to early childhood educators in six European countries

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Abstract: The aim of the current study was to evaluate the training provided by the project "Early Change: Promoting the professional development of early educators".* The training was conducted in six European countries between October 2012 and January 2013, and the participants were 122 early educators from six different countries. The aim of the training was to help the participants develop basic research skills by teaching them how to implement an Environment Rating Scale, the ECERS-R. The evaluation design was based on the use of mixed methods as both qualitative and quantitative data were collected. The results supported the successful provision of the training both towards the improvement of the participants' research skills and the enrichment of their knowledge. Implications for the educational field practice are also discussed.

Keywords: training evaluation, mixed method, professional development of early educators

1 Introduction

1.1 Training evaluation

The systematic pursuit of educators for acquiring new skills and knowledge is a basic presupossition for self-improvement and professional development. In order to meet the increasing need for new skills and knowledge, academic staff, institutes and universities must provide ample training programs and professional development initiatives (Boyle, Lamprianou, & Boyle, 2005). Increasing importance is also being attributed to the value of these initiatives (Torff, Sessions, & Byrnes, 2005). Any training procedure has to improve teachers' practices, otherwise progress cannot be anticipated in students'

learning (Guskey, 2000). That's why evaluation is considered a key feature in identifying efficient training programs and indicating why positive or negative outcomes have appeared (Grammatikopoulos, Zachopoulou, Tsangaridou, Liukkonen, & Pickup, 2008; Guskey, 2000).

Several evaluation approaches have been proposed in the literature and all of them have their advantages and shortcomings (Coldwell, & Simkins, 2011; Guskey, 2000, 2002; Kirkpartick, 1959, 1976, 1994; Kuzmin, 2012; Leithwook, & Levin, 2005). The current study adopted a combination of methods. The quantitative part of the evaluation was based on the "level models" (Kirkpatrick, 1959, 1976, 1994; Guskey, 2000, 2002) and the qualitative on an approach similar to the SWOT method (Hill, & Westbrook, 1997). The "level models" have influenced the domain of training evaluation for decades and are considered very effective in simple instructional designs, such as the design of the current study's training (Yardley, & Dornan, 2012). The qualitative part of the study was based on the reports of the training lecturers and external observers who reported the strengths and the weaknesses of the seminars, making suggestions for future opportunities and identifying possible threats to future efforts. Their reports derived from the analysis, diagnosis and evaluation of the internal and external environment of the procedure. This approach was based on the foundations of the widely known SWOT analysis (Hill, & Westbrook, 1997).

1.2 Using the Environment Rating Scales (ERS) for professional development

The training procedure of this study is the first phase of a project which attempts to enhance the professional development of early educators. The name of the project is "Early Change: Promoting the professional development of early educators" and it is partially funded by the Education, Audiovisual and Culture Executive Agency of the European Committee (EACEA)**.** The project aspires to help early educators improve their skills by enhancing their research skills and by providing them a valid and reliable mean for self-assessment. Thus, the training provided during the first phase of the project had as a main goal the learning of the content, structure, and use of the Early Childhood Environment Rating Scale-Revised (ECERS-R).

The ERS are internationally accepted rating scales for the evaluation of the quality of early childhood education (Mathers, Linskey, Seddon, & Sylva, 2007). ERS scales are being used globaly for decades and their major functions are: (a) research on environment quality, (b) mean for self-evaluation & self-improvement of teaching, and (c) accreditation (mainly in the USA). The ERS have also been used widely for professional development of early educators and various policy makers and stakeholders acknowledge their potential. These initiatives add to our understanding of how research can serve as a mean for the improving of the educational practice (Mathers et al., 2007).

1.3 Procedure and aim of the current study

Based on the successful implementation of the first phase, the educators will proceed with the training phase II that entails the implementation of ECERS-R in the field practice. Because of the importance of the first phase's training, the current study tried to ensure that the evaluation employed will be valid and appropriately designed. In order to meet these requirements, a mixed method design was adopted. Specifically, the triangulation of sources was selected as it is considered that it can reveal contexts which a more narrow approach may fail to highlight. Cohen and Manion (2007) argued that triangulation -by adopting multiple standpoints- can better explain the richness and complexity of human behavior. Altrichter, Feldman, Posch, and Somekh, (2008, p. 147) were congruent with the above argument and stated that triangulation "gives a more detailed and balanced picture of the situation." Additionally, triangulation provides a deeper view of the procedure under evaluation (Towns, & Serpell, 2004).

The aim of the present study was to assess the training for the use of an evaluation scale provided to early educators through a mixed method design. Valuable feedback is considered to be provided by this evaluation procedure to the project coordinators and researchers in order to be taken into account for future efforts.

2 Method

Participants

The participants in this study were 108 (6 male and 102 female) out of the 122 educators who attended the training from six European countries (Denmark, Finland, Greece, Portugal, Romania, & Cyprus). Their mean age was 41.6 years (*SD* ±10.2) and their experience ranged between 2 and 38 years (*M* = 18.5, *SD* ±9.4). 14 were from Denmark, 16 from Romania, 20 from Cyprus, 18 from Finland, 19 from Greece, and 21 from Portugal.

The lecturers (six academics from Portugal and Greece) who taught in the training were asked to provide a report regarding their overall estimation of the provided training.

Additionally, an external observer from each country attended the training held in his/her country and provided their impressions about specific parts of the training. Their report was based on open ended questions that were developed for the contents of the training they observed.

Instruments

An adapted version of the Professional Development Evaluation Form (PDEF) (Grammatikopoulos, Papacharisis, Koustelios, Tsigilis, & Theodorakis,

2004; Grammatikopoulos, Papacharisis, & Koustelios, 2004) was used as the main evaluation instrument. The scores are in a Likerk scale ranging from 1 (lowest) to 5 (highest). The questionnaire was slightly adapted in order to fit better to the design of the current training, similar to the adaptation attempted to another study (Grammatikopoulos et al., 2008).

The six academics reported the strengths and weaknesses of the training, offered suggestions for future opportunities and identified possible threats to future efforts. This evaluation approach was based on the widely applied SWOT analysis (Hill, & Westbrook, 1997).

Procedures

The adapted PDEF was administered to 122 educators and 108 of them completed it and returned it immediately after the end of their training. The six academics and the external observers provided their report a couple of days after the training.

3   Results

The results of the evaluation provide evidence that the early educators were very satisfied with the overall quality of the training and they valued very high all the aspects of it (Table 1). Their reactions were very positive, and they reported that they learned a lot of valuable things during the training that will help them with their teaching practices.

Table 1. Means and Std. Deviations of the training aspects as they evaluated

Training aspects	Mean	Std. Deviation
Learning	4.69	± .52
Use in shcools	4.61	± .58
Total reaction	4.60	± .33

In order to investigate any differences in the educators' scores that can be attributed to their nationality or experience, a Mulitivariate Analysis of Variance (MANOVA) was performed. Multivariate Analysis of Variance is a statistical analysis for comparing multivariate means of several groups and it is used when there are two or more dependent variables, as in our case. The results of the MANOVA in the current study did not reveal any significant differences.

The academics' reports were also encoded and the major findings are presented in Table 2. The organization, the structure, and the knowledge the educators acquired were indicated as the major strengths of the training. The most important part that was described as an "opportunity" was that educators could implement what they learned in the field practice, something that points

out the quality of the content of the training of the current study. The most important weaknesses of the training were focused on the rather "intense" schedule, and the relatively poor English language skills of some participants. Moreover, the additional workload for the educators, and the need for multicultural adjustments for the scales were mentioned as potential threats.

Table 2. Evaluation results by the academics for the training

	Major points which indicated
Strengths	Knowledge that educators gained, Social relationships, Eager educators, Organization, Seminars' structure (combination of lectures & field practice, theoreticians & practicians, interaction)
Weakness	Busy schedule, Not so good English language skills of some participants, Not so good preparation of some participants
Opportunities	The use of what the educators learned in the field practice, Develop an addendum for each country regarding the function of the scales,
Threats	Additional workload for the educators, Multicultural adjustments for the scales

The reports from the external observers were collected and analysed thoroughly, and indicated that the specific training seminars provided by the Early Change project reached their goals and had a high value for the participating educators.

The external observers reported that the training seminars of the Early Change project communicated valuable knowledge to the educators. They also pointed out that the training managed to improve the educators' skills as evaluators and researchers and that it may have a positive effect on their teaching skills and strategies. About the latter argument, all six external observers reported that they would prefer to wait for the completion of the second phase of the project before they draw any firm conclusions. Conclusively, all of them argued that the educators benefited significantly concerning their teaching practices in the daily classroom life.

4   Discussion

The evaluation of the training program of the "Early Change" project was based on the adoption of a mixed method design. The quantitative data suggested that the training was very effective and valuable for the knowledge gained by the participants regarding their field practice experience. The educators' reactions were very positive and reported an overall satisfaction from the training. The qualitative data verified the results of the quantitative, supporting the notion that the application of mixed methods can empower the evaluation data and allow for more profound understandings of a topic (Greene, Kreider, & Mayer, 2005). However, it has to be pointed that small number of participants and specialized content of training limited the scope for generalising claims, especially concerning future implementation and effectiveness (Grammatikopoulos et al., 2008).

The mixed method was based on the integration of the data in the interpretation level. Three approaches were applied and the methods were not blended, but just added on to each other (Celik, Abma, Klinge, & Widdeshoven, 2012). That is the component design of mixed methods where the integration occurs at the level of interpretation and conclusion (Fitzpatrick, Sanders, & Worthen, 2004). The mixed method component design of triangulation aims to strengthen the validity of the construct by exploring the similarity of the results (Grammatikopoulos et al., 2008). In our case, different methods were applied resulting to identical results, and thus indirect evidence was provided for the validity of the measurements.

The results support the argument that the evaluation of the "Early Change" project's training reached its goals without any deviations. Both the qualitative and the quantitative data showed that the educators comprehended the content of the training and acquired valuable knowledge for improving their teaching practices.

Conclusively, it can be agrued that due to their participation in the training, the early educators were able to develop their self-evaluation and research skills. These two goals constitute the basic objectives of the Early Change project and they can improve the educators' professional development. However, the findings that describe a succesful training design can only be confirmed after the completion of the training phase II of the project, which is the implementation of the main study.

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Assessing Student-Teacher relationships: Implementing the Dutch version of STRS in a Greek sample

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Abstract: The aim of the current study was to examine the applicability of the Dutch version of the Student-Teacher Relationship Scale (Koomen, Vershcueren, van Schooten, Jak, & Pianta, 2012). The STRS is a widely used instrument that examines the relationships between students and teachers. The Dutch version of STRS is a slightly adapted scale comprising of 34 items instead of 28 of the original scale. The examination of the original scale in the Greek educational settings showed differentiated findings regarding the *dependency* factor (Gregoriadis, & Tsigilis, 2008). The Dutch version reexamined the items that refer to *dependency*, thus it was decided to adopt it in the current study. The preliminary psychometric properties supported the three-factor solution, even though the *dependency* factor demonstrated low reliability scores supporting the evidence of the previous study in Greece. Further research is needed for an in depth investigation of the nature of student-teacher relationships.

Keywords: Student-Teacher Relationship Scale, exploratory factor analysis, early childhood education

1 Introduction

The Student-Teacher Relationship Scale (STRS) is a widely used instrument assessing the relationships between students and teachers by using teacher ratings. The original scale was developed by Pianta (1994; 2001) and the results revealed that three dimensions described the student-teacher relationships. These dimensions are *closeness*, *conflict*, and *dependency* and have been established successfully in different samples regarding the students' age, ethnicity, socioeconomic status and in different countries (e.g. USA, Greece, Netherlands, Turkey) (Doumen, Koomen, Buyse, Wouters, Vershueren, 2012).

The Dutch version of STRS adopted in the current study is a slightly different scale implemented in a Dutch sample providing adequate psychometric properties (Koomen et al., 2012). The original scale (28 items) was implemented and tested in Greece (Gregoriadis, & Tsigilis, 2008; Tsigilis, & Gregoriadis, 2008) and the results supported the factorial validity of the scale. Yet, findings showed that the *dependency* factor was positively correlated with the *closeness* factor instead of the *conflict* factor, a finding which was in contrast with those of other studies (Gregoriadis, & Tsigilis, 2008). Because of these findings, it was decided to also investigate the Dutch version of STRS which incorporated new items in the *dependency* factor (Koomen et al., 2012).

The STRS is suitable for measuring teachers' perception of their relationships with students between 4-8 years old, namely from preschool to the third grade. A large number of studies have established that high quality teacher-child relationships are important determinants of children's socio-emotional, behavioral and academic functioning in elementary and ECE (e.g., Baker, 2006; Hamre, & Pianta, 2001; Murray, Murray, & Waas, 2008; O' Connor, 2010; Pianta, Hamre, & Stuhlman, 2003). In the current study, the context in which the Dutch version of the STRS was implemented was the early childhood education settings (ages 4-6).

The importance of student-teacher relationships in early childhood education reveals the need for valid and reliable instruments measuring these relationships (Thijs, & Koomen, 2009). Moreover, a widely used and valid scale across different cultures and educational systems provides the opportunity for cross-national comparisons. This is something very important especially in Europe where one of the goals of the European Union regarding education focuses in the homogenization of education across nations. The use of valid instruments such as the STRS could contribute towards meeting this goal. Exploratory factor analysis was selected for this initial effort to test the psychometric properties of the STRS. Exploratory analysis preferred because the Dutch version included items that had not been tested before (Grammatikopoulos, Konstantinidou, Tsigilis, Zachopoulou, Tsangaridou, & Liukkonen, 2008; Grammatikopoulos, Papacharisis, Koustelios, Tsigilis, & Theodorakis, 2004; Grammatikopoulos, Tsigilis, Koustelios, & Theodorakis, 2005; Hatzigeorgiadis, & Biddle, 2000).

The purpose of the current study was to examine the factor structure of the STRS (Dutch version) in the Greek educational context. It was examined whether the structure proposed by Koomen et al, (2012) can be replicated in early childhood education in Greece.

2 Method

Participants

The sample comprised of 1126 students and 275 teachers. 275 preschools from all over the country were participated in the study. 220 were from urban areas, 22 from suburban areas, and 27 from agricultural areas (6 were missing). The students were 588 boys and 535 girls and their age ranged between 4-6 years (*M* = 5.36, *SD* ± 1.02).

Instrument

The 'Dutch version' of STRS (Koomen et al., 2012) was used to evaluate teacher's perceptions of their relationships with their students. The scale consisted of 34 items that measure three dimensions of relationships: *closeness*, *dependency*, and *conflict*.

Procedure

Each teacher had to choose randomly three boys and three girls from his/her classroom and fill in the questionnaires. From the 1650 questionnaires that were initiall administered, 1126 were analyzed in the current study as some teachers returned less than six questionnaires.

Statistical analysis

Principal component analysis with varimax rotation was employed in order to examine the factor structure of STRS. Moreover, reliability scores relied on the Crombach's *α* coefficients.

3 Results

The descriptive statistics regarding the factors of the scale revealed that the teachers rated high the *closeness* factor (*M* = 3.46, *SD* ± .77), low the *conflict* factor (*M* = 1.67, *SD* ± .94), and moderate to high the *dependency* factor (*M* = 2.12, *SD* ± .96).

By implementing the factor analysis, ten items revealed very low loadings (<.30) or had similar loadings in more than one factor. These items were excluded for further analysis. The Principal component analysis revealed that 25 items comprising three factors explained the 43.64% of the common variance. The factor *conflict* comprised of 10 items, the factor *closeness* of 10 items, and the factor *dependency* of five items. The results of the exploratory factor analysis are presented in Table 1. The following Cronbach's *α* were found: *closeness* = .78, *conflict* = .86, and *dependency* = .64. These scores show a good level of internal

consistency for the factors *closeness* and *conflict*, but the factor *dependency* has a questionable internal consistency level.

Table 1. Exploratory Factor Analysis Results on the STRS

	Factor 1	Factor 2	Factor 3
tc22co	.792		
tc24co	.781		
tc18co	.770		
tc20co	.738		
tc26co	.732		
tc23co	.719		
tc25co	.633		
tc16co	.579		
tc2co	.415		
tc11co	.414		
tc34cl		.793	
tc27cl		.695	
tc28cl		.669	
tc32cl		.653	
tc5cl	-.365	.566	
tc21cl		.526	.309
tc15cl		.509	
tc31cl		.505	.302
tc7cl		.417	
tc9cl		.349	
tc17de			.658
tc14de			.642
tc10de			.628
tc8de			.602
tc6de			.584
Eigenvalue	5.01	3.90	1.99
% explained variance	20.05	15.61	7.98

Note: Loadings below .30 are not presented

4   Discussion

The main focus of this study was the examination of the applicability of the Dutch version of STRS in a Greek sample in early childhood education. The factor structure was replicated in the Greek sample and 25 items are considered that can formulate a valid and reliable scale to measure factors of the student-

teacher relationship concept in Greece. Hence, the STRS in its final form with the 25 items can be considered an instrument that can be used with confidence by the researchers in Greece. Nevertheless, as this is just an initial effort to establish the factor structure of the STRS in Greece, further studies with advanced statistical methods (e.g. confirmatory analysis) have to be applied before solid conclusions can be drawn.

Based on the factor mean scores, it can be argued that the Greek teachers have a warm and supportive relationship with their students, which is characterized by low levels of conflict. Yet, the dependency factor has moderate to high scores indicating that in Greece dependency is not considered a behavior that affects negatively the student-teacher relationships in early childhood education. This result was also found in the Gregoriadis, and Tsigilis study (2008), revealing that maybe self-regulation, interdependence, or self-determination do not hold the same position in the Greek educational system as in other societies (Gregoriadis, & Tsigilis, 2008).

In conclusion, this study revealed the applicability of the STRS in the Greek educational context. This result encourages researchers to implement it in different settings (e.g. elementary school) or to further test the psychometric properties of the scale. Moreover, the cross-cultural validity can provide a common ground for comparing and studying the student-teacher relatioships concept.

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Semantically rich description of e-CF based job profiles

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Abstract: In this paper we present an ontology we developed that can be used to store eJob profiles based on the European eCompetence Framework (e-CF). We outline the methodology we used, and then we present the ontology itself, together with instance job profiles. We demonstrate the use of the ontology with the help of competence queries.

Keywords: Job profiles, Ontologies, e-CF, EQF

1 Introduction

A job profile is a description of a set of knowledge, skills, competences that a person should have in order to perform the respective job. A similar description can be used to characterize training courses and content. The use of XML-based meta-data decouples the job profile description from the course description, because the meta-data plays the role of a semantic mediator. The added-value of creating machine readable semantically rich descriptions of job profiles (for example, using an ontology) is that these files can be used by any software application in order to extract the information contained in the job profiles and thus can facilitate the process of developing training course descriptions. Moreover, the production of XML-based machine-readable versions of the jobs profiles will greatly facilitate Europe-wide standardization of the core competence descriptions and at the same time will enable localization to adopt nation-specific particularities, without loss of compatibility among descriptions.

In this paper, we are proposing a semantically rich description of e-CF based job profiles using ontologies; these profiles have been developed in the context of various EU projects (such as PIN (www.prointernet-project.eu) and CompAAL (www.compaal.eu)) and can be downloaded from the e-Jobs Observatory (www.e-jobs-observatory.eu). An ontology is usually defined as "a formal, explicit specification of a shared conceptualization" (Gruber, 1993). A

"conceptualization" refers to an abstract model of some phenomenon in the world, which identifies the relevant concepts of that phenomenon. "Explicit" means that the type of concepts used and the constraints on their use are explicitly defined. "Formal" refers to the fact that the ontology should be machine readable. "Shared" reflects the notion that an ontology captures consensual knowledge, that is, it is not private of some individual, but accepted by a group. Thus, an ontology is a structure of knowledge, used as a means of knowledge sharing within a community of heterogeneous entities. It defines the basic terms and relations comprising the vocabulary of a topic area, as well as the rules for combining terms and relations, to define extensions to the vocabulary (Neches et al, 1991). Ontologies describe domain knowledge in a generic way and provide agreed understanding of a domain. They are means of knowledge sharing and reuse. Sharing means that different applications use the same resources. Reuse means to build new applications, by assembling already built components.

In section 2 of this paper we outline the methodology we used to develop the ontologies. Then we present two phases of ontology development. In section 3 we present the ontology we used to represent e-CF job profiles, while in section 4, we add specific job profiles to it. Section 5 concludes the paper and presentsfuture research directions.

2 Ontology engineering methodology

The aim of the proposed ontology is to connect Job Profiles, e-Competences, e-CF levels and EQF levels in order to describe specific job profiles, serving as a reference point not only for the Human Resources (HR) departments of companies searching for employees but also for people interested in working or studying in those specific fields.

The software used for the development of the ontology was Protégé 4.1 Ontology Editor and Knowledge Acquisition System (OWL DL language). The construction was based on the iterative methodology "Ontology Development 101: A Guide to Creating Your First Ontology" (Noy and McGuiness, 2001). Initially, a main structure was developed and the objects and properties were inserted gradually. The basic steps followed for the comprehension and construction of the ontology are listed below:

Step 1: Determine the domain and scope of the ontology
Step 2: Consider reusing existing ontologies
Step 3: Enumerate important terms in the ontology

Step 4: Define the classes and the class hierarchy
Step 5: Define the properties of classes
Step 6: Define the data properties of the classes
Step 7: Create instances
Step 8: Evaluate the ontology by implementing DL Queries

3 Using an ontology to represent e-CF

The scope of the ontology (step 1) at this stage is related to the European e-Competence Framework (http://www.ecompetences.eu/) and is mainly focused in connecting the three (d1: e-Competence areas, d2: e-Competences, d3: e-Competence Proficiency Levels) out of four dimensions of which e-CF consists (d4: knowledge and skills was not included, as we plan to use an ontology based on the Bloom's taxonomy). At the time of research, no existing ontology that would satisfy the specific requirements of the project was located (step 2).

For the main structure the terms introduced are: E-cf Proficiency Level, Eqf ProficiencyLevel, eCompetences. The connections developed between the European Qualification Framework (European Qualification Framework for lifelong Learning, 2008) or e-CF levels correspond to the values that levels return to the competences (step 3). The classes and subclasses developed at this part of the ontology (step 4) are the following:

- The Class **ProficiencyLevel:** Represents the third dimension of the e-CF (d3: e-Competence Proficiency level), which describes the level to which a competence is assigned according to the e-CF. Subclasses of this class: E-cfProficiencyLevel, EqfProficiencyLevel

- The Class **eCompetences:** This class represents electronic competences mentioned at e-CF. These competences are classified in five categories: Enable Run, Build, Plan and Manage. As a result, there are five subclasses for this class: Enable_eCompetences, Manage_eCompetences, Build_eCompetences, Plan_eCompetences and Run_eCompetences.

In the OWL language, object properties are used to represent special class features. For the classes above, the object properties (step 5) developed are mentioned below:

Object properties	*Classes*
hasProficiencyLevel	eCompetences (domain) -> e-CFlevel (range)
isRrelatedTo	e-CFProficiencyLevel(domain) -> EqfProficiencyLevel (range)
Inverse object	*Classes*

properties	
relatesTo	EqfProficiencyLevel (domain) -> e-CFProficiencyLevel (range)
isProficiencyLevelFor	e-CFProficiencyLevel (domain) -> eCompetences (range)

For the subclasses mentioned, the instances (step 7) introduced are listed below:
- **ProficiencyLevel**
    - **E-cfProficiencyLevel:** e-1, e-2, e-3, e-4, e-5
    - **EqfProficiencyLevel:** EQF_3, EQF_4, EQF_5, EQF_6, EQF_7, EQF_8
- **ECompetences: all 36 e-CF competences grouped in five groups:**
    - **Enable_eCompetences** (i.e. Sales_Management, etc.)
    - **Manage_eCompetences** (i.e. Business_Change_Management, etc.)
    - **Plan_eCompetences** (i.e. Service_Level_Management, etc.)
    - **Run_eCompetences** (i.e. User_Support, Change_Support, etc.)
    - **Build_e Competences** (i.e. Design_and_Development, etc.)

Figure 1 represents the main structure of the competence ontology with all the classes, subclasses, instances and object properties.
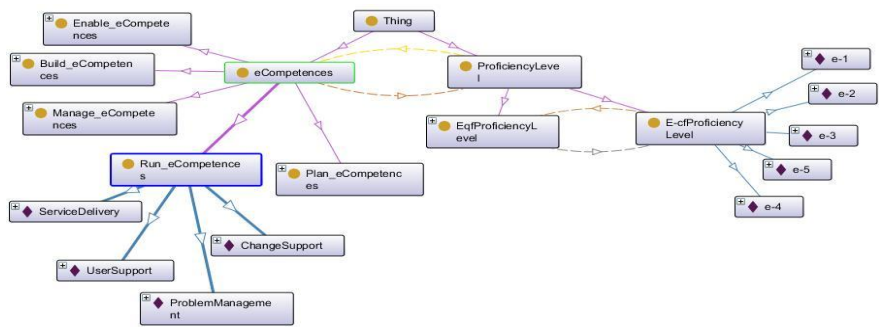

Figure 1. Graphical representation of the ontology

In order to verify if the ontology is developed properly, a series of DL Queries was implemented. These queries follow the Manchester Owl Syntax. For example, the query "Which competences from the ones that belong to the subclasses Build_eCompetences and Run_eCompetences have level e1?" is answered by the system as in Figure 2.
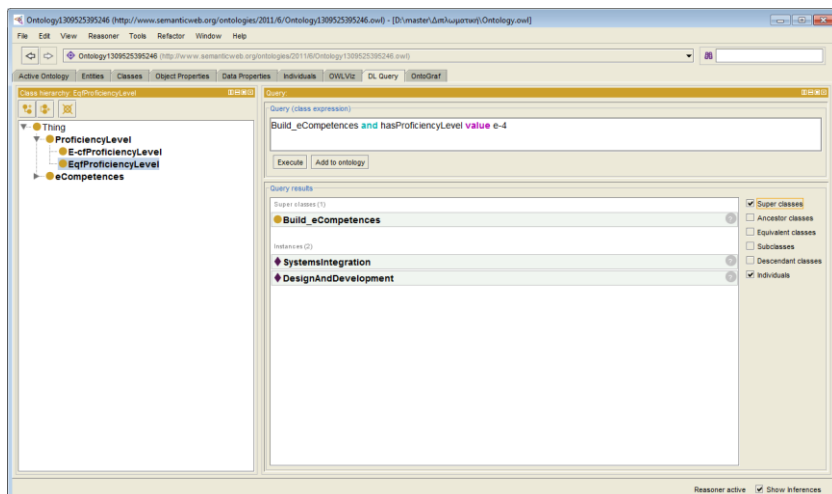
Figure 2. Example competence query and query result

4   Introducing job profiles in the ontology

At this stage, the aim is to relate the term "Job Profiles" with concepts that already exist in the ontology, e.g. "levels" and "competences". Particularly, there has to be a distinct connection (new object property) between the levels and competences, as for every Job Profile there are specific competences –combined with specific levels- required. To illustrate the above, the Job Profile Digital Animator (developed during the PIN project) is used; the job profile is connected with the competence Product or Project Planning, required at the level 3 (Figure 3).

After the description of the topic at this stage (Step 1), the new term "Job Profile" will be represented by the class **JobProfiles** (Step 4). This class includes instances like (Step 7): Digital Animator, Webmaster and Web Designer but not any subclasses (Figure 4).

Figure 3. Excerpt from the Job Profile "Digital Animator"
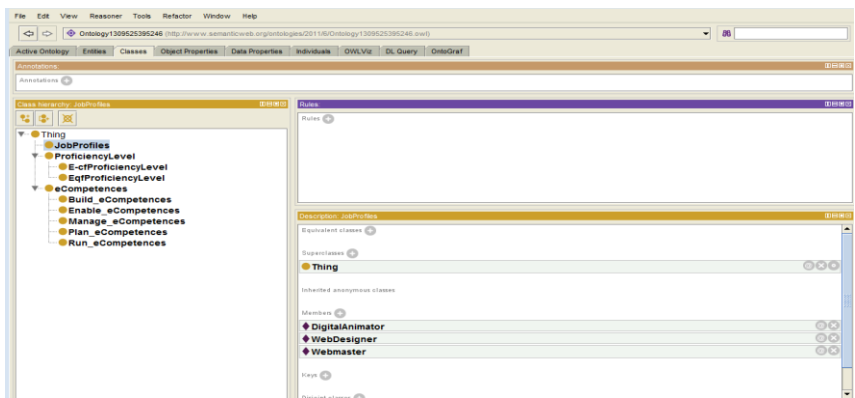
Figure 4. Introducing the class "Job Profiles"

However, to achieve the aim of the ontology at this stage we also need to create new object properties (Step 5), which will connect the classes **ProficiencyLevel**, **eCompetences** and **JobProfiles**. Of course, the previous object properties and inverse object properties are maintained. The present set of object properties is listed below:

Object properties	Classes
hasProficiencyLevel	eCompetences (domain)-> e-CFlevel (range)
isRrelatedTo	E-cfProficiencyLevel(domain)-> EqfProficiencyLevel (range)
haseCompetences	JobProfile (domain)-> eCompetences (range)
hasLevel	eCompetences (domain)-

Inverse object properties	Classes
	>ProficiencyLevel(range)
relatesTo	EqfProficiencyLevel (domain)-> E-cfProficiencyLevel (range)
isProficiencyLevelFor	e-cfProficiencyLevel (domain) ->eCompetences (range)
belongsToJobProfile	eCompetences (domain) -> JobProfile (range)
isLevelFor	ProficiencyLevel (domain)-> eCompetences (range)

Then we associate every Job Profile with its specific competences, which require specific levels as well. After finishing the construction at this stage, a new series of DL Queries has been implemented to evaluate that the ontology runs properly (Step 8). For example, the query "Which job profiles require the Technology Watching competence?" is answered by the system as in Figure 5.

5 Conclusions and Future Work

In this paper we presented the first edition of a job profiles ontology based on the European eCompetence Framework (e-CF). To evaluate the ontology, we added job profile decsriptions developed in the context of European projects PIN and CompAAL. The ontology has managed to accommodate these profiles successfully; it was also used to answer queries regarding these profiles, proving the usefulness of the approach.

In the next phases of our research, we plan to add more profiles in the ontology, as well as to translate the ontology (and the profiles) in different languages, thus providing a tool with European added value in looking for job profiles. Moreover, we plan to add an ontology for the representation of learning outcomes based on the Bloom's taxonomy (Bloom, 1956-64). This will allow us to match profile descriptions with course outline descriptions and learning objects metadata.

6 Acknowledgements
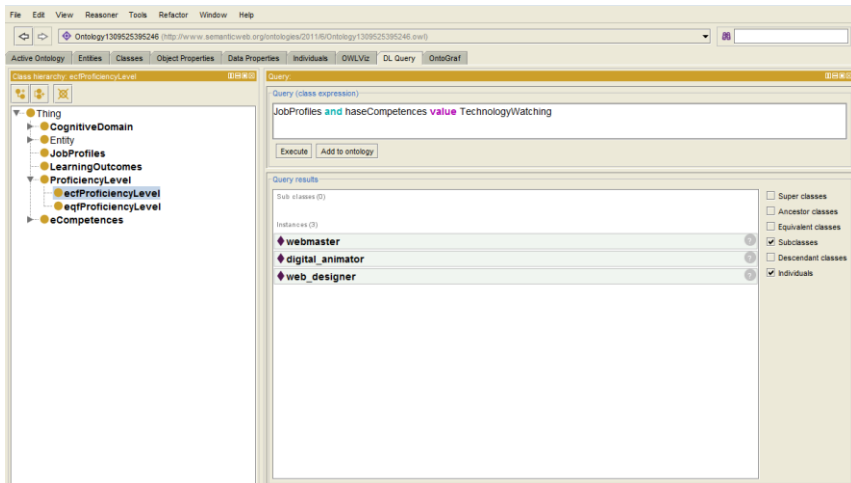
Figure 5. Example competence query and query result

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Project Presentations

Selected and approved after Open Call for Presentations

AGRICOM: Transfer of the Water Competences Model to AGRIcultural COMpetences

Aim and objectives of the project:

Main goal of the project AGRICOM is the transfer and population of the WACOM Water Competence Model (WCM) from the Water Sector to the Agricultural Sector.

Main target groups of the project

Vocational education and training in the agricultural sector and in particular in the fields of irrigation and hydroponics.

How does the project contribute to learning innovations and learning quality?

AGRICOM introduces competence modelling to the agricultural sector to strengthen the transparency and comparability of VET opportunities through the transfer of WCM and the adaptation of ECVET and EQF.

What are the main outcomes of the project?

AGRICOM establishes the first competence model for Hydroponics and Irrigation Management and subsequently be transferred to other fields of the water sector as well as to other branches.

A short quote: What is most important for learning innovations & quality today?

The presentation, the sharing and re-use of skills and competence information is an important and necessary step towards outcome-based education and training and is most important for learning innovations and quality today.

More information about the AGRICOM project is available at:
www.agriculture-competence.eu

Agshare

Aim and objectives of the project:

– To impact the welfare and health of farmers in Africa

– Through improved and enhanced delivery of agriculture curricula that empower MSc students and graduates of African institutions to achieve relevant change in agriculture by leveraging African knowledge generated by students and faculty through participatory action research and OER development processes; integrated into university curricula and disseminated widely into the global knowledge pool.

Main target groups of the project

M.Sc students involved in agricultural value chain research, small holder farmers, faculties of Agriculture and Veterinary Science

How does the project contribute to learning innovations and learning quality?

African Agriculturalists will use open educational resources to not only create contextually relevant resources but will learn how to incorporate OER published by such distinguished organizations as FAO.

What are the main outcomes of the project?

Make science based agriculture resources available in Africa to impact teaching, learning and small holder livelihoods.

A short quote: What is most important for learning innovations & quality today?

Students need to be engaged in authentic problem solving in agriculture especially in the developing countries of Africa. Agshare changes teaching and learning by positively impacting community stakeholders and farmers.

More information about the Agshare project is at:

http://www.oerafrica.org/agshare/AgShareHome/tabid/1290/Default.aspx

Contacts: Karen Vignare, PhD, vignare@msu.edu; Alice Barlow-Zambodla, PhD, alicebz@saide.org.za

Aqua-tnet: Erasmus Thematic Network in aquaculture, fisheries and aquatic resources management

Aim and objectives of the project:

To support the progress of the European aquaculture, fisheries and aquatic resources management sector towards the EC policy goal of greater and sustainable output (COM(2009) 169 final) by stimulating and supporting innovation through enhanced lifelong learning opportunities. The Network also aims to help embed EC Lifelong Learning policy objectives within partner institutions and across sector activities.

Main target groups of the project

Tertiary education organisations involved with the aquaculture and fisheries sectors and associated stakeholders including research organisations, industry and students.

How does the project contribute to learning innovations and learning quality?

It enables members from diverse organisations to learn and collaborate together on implementing learning innovations and quality enhancements.

What are the main outcomes of the project?

An online "Education Gate" for aquaculture and fisheries providing institutional and course information to enhance student mobility; Collaborative MSc course materials; Generic skills and specialised PhD training; Support activities for members on implementing innovations and enhancing learning quality.

A short quote: What is most important for learning innovations & quality today?

Greater sharing of learning throughout life

More information about the Aqua-tnet project is at: http://www.aquatnet.com/

ARISTOTELE: Personalised Learning & Collaborative Working Environments Fostering Social Creativity and Innovations inside the Organisations

Aim and objectives of the project:

To enhance learning and training of workers within their organisations by defining and developing models, methodologies, technologies and tools to support the emergence of competences and creativity by self-organizing acquisition, processing and sharing of new information and knowledge with peers.

Main target groups of the project

Knowledge workers and their organisations

How does the project contribute to learning innovations and learning quality?

The system combines the evidence-based detection of learning needs of employees with the provision of learning resources (gathered through re-combination and merging of already available resources, user generated content, informal elements etc. on the basis of semantic proximity) and different didactical options

What are the main outcomes of the project?

A comprehensive system (methodologies and tools) that supports organisations and their members at all stages of individualised and organisational learning processes (from learning needs detection over learning material re-mixing to evaluation)

A short quote: What is most important for learning innovations & quality today?

A comprehensive view on learning and quality systems.

More information about the aristotele project is at: www.aristotele-ip.eu

BiBiKit: An On-line Editor for Sign Bilingual Projects

Aim and objectives of the project

Sign language users are a 'niche' market with very specific requirements and little commercial interest for mainstream publishers. As a result, sign language teachers, authors, poets, etc. produce 'home-made' materials and/or are dependent on funding for professional productions. BiBiKit was developed to enable anyone to produce sign bilingual materials quickly and easily, with attractive output that can be viewed with a standard browser. Secondary objectives of the BiBiKit project are to promote the use of BiBiKit in the education of sign language users and learners, to help producers of signed materials to market their products, and to promote EU-wide co-operation in this field.

Main target groups of the project

The BiBiKit target groups are sign language users and anyone involved in the production of bilingual materials for sign language users.

How does the project contribute to learning innovations and learning quality?

BiBiKit is an on-line editor that outputs 'linked' projects: slides with texts and/or pictures, linked to one or more frames in a video. Click on the text or the picture, and you see the linked video. BiBiKit can be used to produce sign bilingual stories, dictionaries, learning materials, homework, songs, poems, cookbooks, manuals, and anything else teachers and sign language users can think of.

What are the main outcomes of the project?

The online BiBiKit Editor and a growing number of BiBiKit projects.

A short quote: What is most important for learning innovations & quality today?

Niche markets can promote learning innovation *&* quality for all!

More information about the BiBiKit project

http://www.bibikit.eu/ and http://www.bibikit.net

Blended Learning: A continous learning approach to develop capacities of food security professionals in three regions

Aim and objectives of the project:

The project supports three regional organizations in designing, developing and delivering capacity development programmes on food security that address the staff development needs in both technical and cross-cutting skills at national level. The project makes use of existing e-learning and training resources, and the expertise of FAO and GIZ to develop the capacities of regional organizations to design and deliver capacity development programmes related to food security.

Main target groups of the project

- staff and people concerned with food security issues, and staff involved with the collection, management, analysis and reporting of food security information at national level

How does the project contribute to learning innovations and learning quality?

The modality used to deliver the learning programmes is blended learning, in which an in-depth online workshop precedes a face-2-face event at the regional partner institution and will be followed by a post-workshop mentoring period. The "just-in-time" training format offered by self-paced e-learning provides a more flexible and learner-centric approach to on-the-job learning, while online and in-country workshops allow for tailored approaches to collaborative group learning, coaching and mentoring, and customization for local contexts.

What are the main outcomes of the project?

- Three regional organizations and their cooperating partners design, develop and deliver training programmes for food and nutrition security.

A short quote: What is most important for learning innovations & quality today?

Collaboration with peers and Individualisation of learning – the learner at the centre.

More information about the Learning Programme is at:

http://caadpcomesa.wordpress.com/2012/05/31/caadp-in-collaboration-with-fao-successfully-implement-an-e-learning-programme-on-food-and-nutrition-security-caadp-pillar-iii/

http://typo3.fao.org/fileadmin/user_upload/eufao-fsi4dm/docs/CD4FAFS-COMESA-2013.pdf

careNET: Building ICT competencies in the long-term care sector to enhance quality of life for older people and those at risk of exclusion

Aim and objectives of the project:

The careNET project aims at developing a set of ICT competences in two identified 'at risk' target groups: low ICT skilled care-workers and older persons to promote social inclusion and improvement of quality of life.

Main target groups of the project:

Primary target groups are institutions and individuals who are directly involved in elderly care. Secondary target groups are research groups involved in social care and policy-makers in care systems from local to European level.

How does the project contribute to learning innovations and learning quality?

Learning centres will be established and an online social network will be put in place for care workers, experts and researchers.

What are the main outcomes of the project?

The project has identified key behaviours that require digital competences in order to define common ICT competences needed by the two target groups. This methodology will lead to a map of domains of competence. After designing and developing modular learning paths and learning resources, they will be piloted by involving at least 150 care workers and old people.

A short quote: What is most important for learning innovations & quality today?

Learning innovations should support everyday life situations.

More information about the careNET project is at:

http://www.carenetproject.eu

Case Simulator

Aim and objectives of the project:

Improving the skills of building entrepreneurial attitudes among young people entering the labour market.

Main target groups of the project:

Final year students of the University of Gdansk, Poland.

How does the project contribute to learning innovations and learning quality?

During the first stage of the project a computer simulation of business processes was designed, created and embedded on an educational platform. This tool relates to actual problems connected with running business in Northern Poland. As a supporting and complementary instrument, 10 tailored related to simulation case studies were prepared. At economic and non-economic faculties, groups of students have been created and divided into competing teams. Classes are held during full-time studies under the guidance of experts (case studies analysis and activities improving entrepreneurial skills) and also remotely (working with simulation embedded on the internet). The teaching method is based on three general linked ideas: using ICT (simulation), work in small groups over the real and actual problems of the specific market (case studies) and the guidance of business experts from the local market.

What are the main outcomes of the project?

Strengthening the position of young people in the labour market and contributing to the setting up of their own businesses more actively.

A short quote: What is most important for learning innovations & quality today?

The most important factor for innovative and quality learning is providing the up-to-date knowledge that addresses real-life problems of the students, enhancing their competitive position on labour market, taught in attractive way - preferably employing multimedia and combination of direct and distant learning. High quality should mean perfect two-way communication between students and lecturers, with clear learning objectives and ability to provide useful information on one side and deep involvement in studying on the other.

More information about the Case Simulator project is at: http://casesimulator.pl

CENTRES: Creativity and Entrepreneurship in Schools

Aim and objectives of the project:

The purpose of the CENTRES network is to create the first European multi-sectoral forum for issues relating to entrepreneurship education specific to the creative industries and for sharing innovation and best practice in this area.

Main target groups of the project

Educators: teachers, headteachers, organisations involved in entrepreneurship education and other learning providers in Europe; Secondary school students in participating European countries; Policy-makers and other stakeholders responsible for education policy and practice at European and national level e.g. Ministries of Education and Culture, local education authorities, EU institutions; Stakeholders with an interest in entrepreneurship education and the CCIs from across Europe.

How does the project contribute to learning innovations and learning quality?

It promotes models and methodology that can be used by schools and other organisations delivering entrepreneurship education to develop pupils' creativity and entrepreneurship skills as well as new ways in which to engage creative entrepreneurs / businesses productively with schools as well as engage school-age students in practical business opportunities in the creative industries

What are the main outcomes of the project?

An online knowledge bank of materials, models, tools, methodologies and guidelines that can be used by teachers and organisations working with this type of skills development in schools

A short quote: What is most important for learning innovations & quality today?

"Entrepreneurship is a way of thinking and doing. It is an attitude towards life, which means being a responsible actor and being able to lead one's one mind"

More information about the CENTRES project is at: http://www.centres-eu.org

CLEAR - Creativity and innovation:
pedagogical framework for the LEARning chain

CLEAR website: www.clearcreativity.eu

CLEAR: Creativity and Innovation: pedagogical framework for the learning Chain

Aim and objectives of the project:

The project aims to improve Lifelong learning strategies by designing a pedagogical framework to raise awareness on the importance of creativity for innovation in organisations. CLEAR analysed approaches and collected practices in the 3 sectors of the learning chain: scientific and technology academic education, post academic/ non academic higher education, continuous training in Italy, United Kingdom, Spain, Norway.

Main target groups of the project: Practitioners/Trainers and Academic staff, Policy makers in charge of education, training and labour policies.

How does the project contribute to learning innovations and learning quality?

CLEAR identifies the role of creativity and ideas generation for innovation in scientific education and continuous training in companies. Seminars, National and EU conferences discuss the role of: a. policies; b. infrastructures, c. entrepreneurship d. communication/marketing.

What are the main outcomes of the project?

3 reports to be discussed in 8 Seminars and 5 conferences.

A short quote: What is most important for learning innovations & quality today?

Imagine trying to cut a piece of paper with just one blade of a pair of scissors. It's near impossible. Yet that is what we try to do with innovation policy. We rely on supply side measures to push technology. We neglect the critical role that demand and markets play in pulling innovation through. We need to use both blades of the scissors. L. Georghiou.

More information about the CLEAR project is at: http://www.clearcreativity.eu/

ClipFlair: Foreign Language Learning through Interactive Revoicing and Captioning of Clips

Aim and objectives of the project:

To counter the factors that discourage Foreign Language Learning (FLL) by providing a **motivating, easily accessible platform** for FLL through **revoicing** (e.g. dubbing, audio description, karaoke singing, reciting) and **captioning** (e.g. subtitling, video annotations) of clips (e.g. film scenes, documentaries, news)

Main target groups of the project

Adult, secondary education and university FL teachers and learners.

How does the project contribute to learning innovations and learning quality?

The first online platform for FLL activities based on revoicing and captioning of clips. Users can easily replicate prototype activities by remixing contents: (clips, instructions, captions, recorded voice) for different levels and different languages.

What are the main outcomes of the project?

(a) An open-source web application for creating, using and storing activities in 15 languages, (b) a social networking area, (c) a library of resources (clips and activities), accompanied by (d) corresponding lesson plans as well as (e) metadata and (f) guidelines for activity creation and evaluation criteria. A community of of over 1.500 learners and teachers is targeted.

A short quote: What is most important for learning innovations & quality today?

Establishing sound selection criteria for all learning materials.

More information about the ClipFlair project is at:
http://www.clipflair.net/

Web 2.0-based communities and social learning to strengthen competencies of people at risk of exclusion

Aim and objectives of the project:

CONNECT (2010-2012) developed in DE, IT, ES, LT, web-based learning for e-skills and skills for life, to improve social and economic participation of adults.

Main target groups of the project

The 220 target people were unemployed or temporary jobs women, older people and immigrants, with cultural integration difficulties and digital gaps.

How does the project contribute to learning innovations and learning quality?

Informal learning, unconscious and unintentional process, is very difficult to be described and made explicit. When trying to recognize it, it becomes different. CONNECT activated two learning processes, at the target group level and at the tutor level. Both levels included "deutero learning": informal learning, reflections and analysis on informal learning itself, and ways of recognition. Tutors had to learn how to structure processes at their levels, how to move from implicit, to explicit, how to make informal, formal. The CONNECT Handbook adopts a narrative approach, taking the readers with no experience of web 2.0 opportunities, by the hand and accompanying them through the portrayal.

What are the main outcomes of the project?

At the end of the project, CONNECTERS had enhanced four key competences: digital, learning to learn, social and civic, sense of initiative and entrepreneurship. Assessments based on narration were implemented to recognise the social, informal dimensions of learning.

A short quote: What is most important for learning innovations & quality today?

Learning innovation fosters, values, recognises, any learning going beyond the traditional "one to many", structured and formal schemes; *quality* means first, sharing common frameworks and increasing transparency.

More information about the CONNECT project is at:
www.connect-project.eu All the products realized by the CONNECT partnership.
www.connect-learning.polimi.it All the products realized by the CONNECTERS. For the Transnational community, no registration is required.

DARe-learning: Disability Awareness of Academic Teachers: Improvements through E-Learning

Aim and objectives of the project:

DARe-Learning is about getting to know one another. We are becoming familiar with each other's needs, including those stemming from a specific disability type and degree. We are all learning in order to create and develop better, knowledge-based, societies, where no-one is excluded on grounds of their disability or for any other reason. The main aim of the project is to enhance the level of vocational qualifications of academic teachers in regard to their knowledge of disability and modern educational methods used in working with persons with disabilities.

Main target groups of the project

Academic teachers and academic staff

How does the project contribute to learning innovations and learning quality?

The innovative nature of the project consists of well known and tested (in a number of commercial projects and in academic contexts) mixed form of education known as blended learning (a combination of distance learning and conventional education). Such a way of acquiring knowledge about disability will be appealing to the participants. It will engage them more and exercise further knowledge already acquired in the group training sessions.

What are the main outcomes of the project?

The project outcome will be a syllabus of a disability awareness training course for academic teachers and an e-learning platform, which will be integrated into the existing www.DareLearning.eu website a thematic portal for teachers focusing on educational support for persons with disabilities.

A short quote: What is most important for learning innovations & quality today?

The most important thing in learning is the ability to present scientific truth in a clear, understandable and transparent way to all society members.

More information about the DARe-Learning project is at: http://darelearning.eu/

DigiSkills: Network for the enhancement of digital competence skills

Aim and objectives of the project:

The overall objective of the project is not only to improve classroom practice, but also to both raise the awareness of educational community across Europe on the need for innovative teaching and learning practices and learning to learn skills.

Main target groups of the project:

Secondary, Higher, Adult Education

How does the project contribute to learning innovations and learning quality?

To develop a detailed and systematic methodology to define the criteria for identifying the best practices (as identified in each partner) and then operate as the frame for the collection and formation of exceptional teaching and learning approaches with the view to provide/collect innovative teaching and learning practices.

What are the main outcomes of the project?:

In general, the project aims to improve Secondary EducationE, HE and AE teachers practice in all areas of their work, combining ICT skills with innovations in pedagogy, curriculum, and institution organisation. It is also aimed at SE, HE and AE teachers' use of ICT skills and resources to improve their teaching, to collaborate with colleagues, and perhaps ultimately to become innovation leaders in their institutions. In addition, train technically competent staff (such as ICT personnel or teachers of Informatics) about the ways they can select some of the existing, easy-to-use, and free-of-cost software tools.

A short quote: What is most important for learning innovations & quality today?

eLearning resources should meet the educational and quality needs of the communities they supporte

More information about the DigiSkills project is at: http://www.ea.gr/ep/digiskills

Digital Literacy 2.0

Aim and objectives of the project:

Digital Literacy 2.0 project (519032-LLP-1-2011-1-DE-KA3-KA3MP) follows a two-step approach: 1. Train-the-trainer: With training materials compiled by institutions in Belgium, Bulgaria, France, Germany, Poland, Portugal and the UK and coordinated by Stiftung Digitale Chancen, staff in non-formal learning settings (libraries, welfare organisations) are being qualified to teach ICT skills to socially and educationally disadvantaged adults; 2. Qualify-the-user: The thus qualified staff will train eligible clients at their workplaces, using small learning modules of web 2.0 activities relevant to the clients' daily lives.

Main target groups of the project

The target group of the project, which will be accessed by the qualified multipliers in non-formal learning settings, are socially and educationally disadvantaged adults.

How does the project contribute to learning innovations and learning quality?

The project tests a new way of approaching "hard-to-reach" disadvantaged adults and of qualifying this target group by using a practice oriented learning method and learning content that is relevant to their daily lives.

What are the main outcomes of the project?

Staff in non-formal learning settings in seven European countries will be qualified to teach ICT skills to a potentially unlimited number of disadvantaged adults.

A short quote: What is most important for learning innovations & quality today?

What is most important is to reach the right people and to teach them things they can actually use.

More information about the DLit 2.0 project is at:
http://www.digital-literacy2020.eu

DynaMAT: Dynamical and creative Mathematics using ICT

Aim and objectives of the project:

To produce concrete examples, hints and good practices on how to apply dynamical ICT, and in the same time to develop effectively the dynamical thinking, reasoning and creativity of their pupils. We will tackle this situation with two approaches:

a.   show how the use of ICT can develop the visualization process,

b.   show how to make visual reasoning an acceptable practice in mathematics education in combination with algebraic reasoning.

Main target groups of the project

Pre- and in-service teachers of primary and secondary levels.

How does the project contribute to learning innovations and learning quality?

It shows possibilities of using dynamic ICT in teaching mathematics in a motivating way, without falling into the "ICT everywhere = good teaching" trap.

What are the main outcomes of the project?

E-book with materials; E-learning courses for teacher training; workshops for teachers; final conference; project website.

A short quote: What is most important for learning innovations & quality today?

To bridge the gap between existing motivating materials / teaching practices and rigid school reality.

More information about the DynaMAT project is at:
http://www.dynamathmat.eu/

EAP_SEL: European Assessment Protocol for Children's SEL Skills

Aim and objectives of the project:

This research shows that social and emotional skills can be taught. The main purpose of this project is the creation of a standardized assessment tool that will be able to offer precise evaluation guide-lines for social and emotional learning (SEL) on an European dimension.

Main target groups of the project

Students and teachers from primary schools in 5 partner countries: Italy, Switzerland, Croatia, Slovenia and Sweden. 10 first year classes at primary school (school year 2013/2014) will be selected in order to start the intervention of SEL and other 10 first year classes (control) will be involved (about 1,000 students).

How does the project contribute to learning innovations and learning quality?

Creating of a standardized SEL assessment tool; proposing a European model of SEL and the establishment of a European SEL Committee.

What are the main outcomes of the project?

To develop and validate a European SEL Assessment Protocol; to found a European SEL Board; to state and share the teaching good practices; to carry out a series of parallel experimentations within the countries involved in the project.

A short quote: What is most important for learning innovations & quality today?

To enhance SEL all over Europe through the use of a European Assessment Protocol, too, thanks to the cooperation of qualified partners in this field.

More information about the EAP_SEL project is at: http://www.eap-sel.eu

Early Change: Promoting the Professional Development of Early Childhood Educators

Aim and objectives of the project:

'Early Change' project attempts (i) to enhance the professional development of early educators, and (ii) to evaluate the early childhood education environments of six European countries. It commenced on the 1st of December 2011 and its duration is 30 months

Main target groups of the project

The participants are educators from 10 educational districts and academics from 9 Universities. Early educators from 6 countries (Greece, Portugal, Finland, Denmark, Cyprus & Romania) will acquire skills that enhance their professional identity and their self-assessment skills. They will be trained in using the Early Childhood Environmental Rating Scale-R (ECERS-R) that evaluates the quality of early childhood environment. Moreover, a wide range of 'good practices' implemented in these classrooms will be collected.

How does the project contribute to learning innovations and learning quality?

By enhancing the research skills of early educators and by collecting and comparing good practices from six different educational systems and cultures.

What are the main outcomes of the project?

The project will provide empirical data for the quality of 6 European ECE systems. The project's outputs will offer valuable information to various stakeholders.

A short quote: What is most important for learning innovations & quality today?

The integration of the ICTs' potentials into the every day practice in schools.

More information about the project is at:
www.earlychange.teithe.gr

EarlyQ: Evaluation of early childhood education quality

Aim and objectives of the project:

The aim of this project is the evaluation of the Early Childhood Education quality in Greece. The objectives are: 1) the provision of valid and reliable instruments for the evaluation of ECE in the Greek educational setting, 2) the development of a training programme for using the instruments and 3) the creation of a data base about the quality of ECE in Greece.

Main target groups of the project

Three research teams are cooperating to complete this project, including academics and researchers from 9 Universities from Greece, UK, Germany, Brazil & Cyprus. Data collection will be conducted in Greek ECE units in two phases - the pilot and the main study. 20 assessors will be trained by attending two training seminars. The multistage sampling technique will be used to select around 650 classrooms that will be evaluated from various regions of the country.

How does the project contribute to learning innovations and learning quality?

The collection of empirical data for all the dimensions of ECE in Greece will provide a documented view regarding ECE. Such knowledge will give valuable information to the state authorities for focused and effective interventions and for educational policies that could contribute to learning innovations and quality.

What are the main outcomes of the project?

(a) A well-documented evaluation of the quality of ECE in Greek preschool centres and the development of evaluation norms, (b) The comparability among the quality of ECE in Greece and in other. (c) The initiation of the appropriate procedures to upgrade the quality of ECE in Greece.

A short quote: What is most important for learning innovations & quality today?

Integrating the digital media in the classroom in a pedagogically appropriate way.

More information about the Early Quality project is at:

http://earlyquality.teithe.gr

ESTABLISH: European Science and Technology in Action: Building Links with Industry, Schools and Home

Aim and objectives of the project:

The ESTABLISH consortium of more than 60 partners from 11 European countries will collaborate in this project to encourage and promote the use of Inquiry-Based Science Education (IBSE). Members of the consortium are working with teachers and students of their region to develop and implement IBSE units and evaluation tools which are adapted for each of the participating countries.

Main target groups of the project:

The rationale for ESTABLISH lies in creating authentic learning environments for science by involving all relevant stakeholders, particularly the scientific industrial community, policy makers, parents, science education researchers and teachers to drive change in the classroom of second level schools.

How does the project contribute to learning innovations and learning quality?

Innovation in classroom practice is achieved by this involvement of stakeholders for the development and provision of appropriate teaching and learning IBSE units (informed by scientific and industrial communities) and appropriate supports for both in-service and pre-service teachers to implement IBSE.

What are the main outcomes of the project?

The outcome will be a large team of science teachers across Europe that is skilled and confident in inquiry based science teaching methodology. Also suitable model(s) of science teacher education will be identificated for inquiry based science teaching and promotion of inquiry in the classroom, involving the relevant stakeholders in science and science education.

A short quote: What is most important for learning innovations & quality today?

The most important for learning innovations and quality today is an evolutionary development process with long-term projects, mutual respect of the diverse cultures of stakeholders, evidence based development and gaining evidence through research.

More information about ESTABLISH project is at: http://www.establish-fp7.eu/

EUCoopC: European Coop Campus

Aim and objectives of the project:
The *European Coop Campus* project aims to develop an innovative application of ECVET tools at international level both to increase and to recognize member cooperative competences as a way of empowering coop enterprise and encouraging cooperation throughout Europe. Learning and working needs of cooperative managers are matched to design an ad-hoc credit system that recognizes and qualifies skills in answer to European market needs, simultaneously enhancing mobility and transfer of skills at a transnational level.

Main target groups of the project:
Cooperative managers, members, cooperative trainers, national and international cooperative organisations, VET providers, universities, research centers for education & training.

How does the project contribute to learning innovations and learning quality?
European *Coop Campus* implements an innovative application of ECVET tools centered on emerging coop managers' job profiles to allow shared recognition of competences and validation of non-formal and informal coop learning; and to better balance local needs with European opportunities.

What are the main outcomes of the project?
A defined cooperative manager job profile; codified mobility learning units; ECVET guidelines and tools for coop training organizations; a permanent network as coop campus for mobility exchanges at national and European level.

A short quote: What is most important for learning innovations & quality today?
The creation and recognition of value added skills facilitated by more transparent standards and a combination of open source learning opportunites.

More information about the EUCoopC project is at: www.coopcampus.eu
Project co-financed by Leonardo da Vinci programme - LLP

EUROBANQUA: EUROpean Banking Network for QUAlity Assurance

Aim and objectives of the project:

Apply the Common Quality Assessment Framework (CQAF) to the Banking and Financial Services Sector (FSS) in Europe by linking this model with current developments and challenges towards improvement of training provision in the Sector.

Main target groups of the project

EUROBANQUA focused on the FSS, both of high economic relevance for the worldwide competitiveness of the European Union and the provision of employment for a substantial part of the European population.

How does the project contribute to learning innovations and learning quality?

The existing approaches for Quality Assurance from different countries have been confronted and re-interpreted with the CQAF-model, aiming to boost current training practices in the FSS by establishing and strengthening sustainable European transnational cooperation on quality issues, and finally, to support further developments of the CQAF-model.

What are the main outcomes of the project?

A set of 10 Guidelines which map the process of a quality cycle in accordance with the Common Quality Assessment Framework (CQAF) referring to the 4 phases: Plan, Do, Check & Review.

A short quote: What is most important for learning innovations & quality today?

Coherent approach for better matching demand and training supply in the FSS including an inventory of good-practice instruments which are in use.

More information about the EUROBANQUA project is at:

www.eurobanqua.eu

Europortfolio

Aim and objectives of the project:

The objective of Europortfolio is to create a community of ePortfolio and identity professionals, that will contribute to the transformation of education and employment in the 21st century.

Main target groups of the project

ePortfolio experts and practitioners, teachers, trainers, educators, pupils, students, workers, citizens, human resource managers, employers, technology providers, policy makers.

How does the project contribute to learning innovations and learning quality?

Europortfolio contributes to learning innovation by promoting an exploitation of digital and networked technologies conducive to authentic learning and assessment, reflective learning and practice. By providing a natural learning audit trail, ePortfolios are the obvious place to collect data required for quality assurance of learning and assessment processes. Europortfolio will also use Open Badges, an Open trust network, to recognise and accredit the competencies of its members, so that every claim contained in the ePortfolios will be fully trustworthy.

What are the main outcomes of the project?

Europortfolio will produce an information portal providing access to all the initiatives, projects, organisations, people, tools related to ePortfolios. The other outcomes of the project are a framework for ePortfolio practice, design an ePortfolio maturity matrix to help organisations to implement and improve ePortfolio initiatives, open learning resources (OER) to support those implementing ePortfolio initiatives, and Open Badges to recognise their competencies.

A short quote: What is most important for learning innovations & quality today?

One critical point for quality in general, hence for learning, is trust: how can we trust if the diploma is authentic, whether the content of an ePortfolio is authentic, etc. It is to address this question that Europortfolio will use Open Badges.

More information about the Europortfolio project is at: www.eportfolio.eu

EuroVersity

Aim and objectives of the project:

To become a network of practitioners and experts in virtual world and reality applications for all levels of education and training in Europe. The objectives of the network are to develop a digital repository of experiential information and to provide a context for ongoing discussion and development in the field.

Main target groups of the project

Current and prospective users of virtual worlds and virtual reality in education. This includes teachers, teacher trainers, educational managers, online learning specialists, librarians and those responsible for digital repositories.

How does the project contribute to learning innovations and learning quality?

By synthesizing good practice for learning in virtual worlds through the quality benchmarks developed by the Network. At the heart of this process is a commitment to community discussion of how virtual worlds can be used to re-think traditional practice or to add value to educational experiences with eventual translation through to policy.

What are the main outcomes of the project?

The main outcomes are growth of the Network, an open digital repository of community knowledge and resources, and a set of *Guidelines for Users*.

A short quote: What is most important for learning innovations & quality today?

The ability to visualise robust alternate realities for education and to bring them into practice.

More information about the EuroVersity project is at:
http://www.euroversity.eu/

FIESTA: Facilitating Inclusive Education and Supporting the Transition Agenda

Aim and objectives of the project:

The FIESTA network aims to develop a multi-disciplinary learning approach for professionals in education, health & social services in order to facilitate the additional learning and support requirements of children with special needs during periods of transition.

Main target groups of the project

The network will facilitate children with special needs and families during the following periods of transition:

1. Transition of children with special needs from pre-school to primary school and from primary school to secondary school
2. Transition of children with special needs to mainstream environments

How does the project contribute to learning innovations and learning quality?

Significant policy developments have taken place on an international basis to harness and adopt inclusive education however reforms in many areas are needed and this remains very challenging for many EU member states. Transition and collaborative working are core areas which have been neglected in facilitating inclusive education for children with special educational needs (SEN). FIESTA focuses on achieving effective transition through collaborative working for children with SEN.

What are the main outcomes of the project?

Network outcomes include transferable tools such as the self-assessment tool, transition starter kit, 3 training modules and video learning to name a few, these can be used for pupils with special needs and for other pupils who may be particularly vulnerable during transition periods

What is most important for learning innovations & quality today?

Transition can be a complex and stressful time for any pupil. The network provides parents and children with SEN, teachers and health/social professionals the opportunity to collaborate and meet the individual needs of pupils with special needs during transition.

More information about the FIESTA project is at: http://www.fiesta-project.eu

FoRWaRd: Food Recovery and Waste Reduction

Aim and objectives of the project:

The project intends to develop a free online training plan for representatives of the food supply sector, a practical guide to help them starting a food waste reduction and recovery program at their facilities in favor of charitable associations

Main target groups of the project

The target group is twofold: a) representatives of the food supply chain and

b) NGOs and charitable associations. While target group a)will directly exploit the acquired skills in their facilities/business, target group b)could also exploit such knowledge in order to work as "consultants" for food suppliers and/or to organize recovery systems in their territory. The two groups will be trained as food wastemanagers: they'll be able to identify where and how waste is produced and the best solutions to reduce and collect it, so to save money, pollution and time

How does the project contribute to learning innovations and learning quality?

The innovative aspect of the project resides in the idea, the methods and the tools proposed to assure Knowledge, innovation and ideas management in LET context: it will provide the first standardized method to reduce food waste and favour its recovery. The coordinator uses the new-coined word "VIS-EDUCATION", a matching of traditional education and visual interactive elements that makes learning faster, more attractive, and memorization of contents more effective

What are the main outcomes of the project?

The project will produce two main outputs: on one hand a training pathway for food suppliers and NGOs and charitable associations, on the other a simple food recovery IT solution

A short quote: What is most important for learning innovations & quality today?

The development of training system as close to the learners needs as possible and to make learning more attractive and effective by using innovative tools

More information about the project is at: http://foodrecoveryproject.eu/

GTTP: Galiloe Teacher Training Program

Aim and objectives of the project:

GTTP is a program aiming to training teachers on the use of modern tools and resources for science education

Main target groups of the project

Teachers and trainers from all grade levels and transversal to several discipline areas

How does the project contribute to learning innovations and learning quality?

The innovativeness of GTTP is the strong and sustainable network of teachers were a cascade method. Teachers are incentivized to apply the learned tools and resources in classroom, becoming Galileo Teachers. Galileo Teachers are invited to train other teachers becoming Galileo Ambassadors.

What are the main outcomes of the project?

The GTTP movement has reached over 100 nations worldwide and over 17 000 teachers have been trained using GTTP criteria

A short quote: What is most important for learning innovations & quality today?

GTTP is partner with important European science education research project and its methodology being successfully used to successfully promote innovation. Examples of such projects are Discover the Cosmos, European Hands-on Universe, etc.

More information about the project is at: www.galileoteachers.org

iQu: Integrierte Qualitätsoffensive in Lehre und Studium

Aim and objectives of the project:

iQu ist the German acronym for "Integrated Quality Initiative in Teaching and Studies at the Heinrich Heine University Düsseldorf" (compare the project´s logo above). It is funded by the German national government and the federal states until the end of the year 2016 with the option of renewal subject to a positive final evaluation of the project. One of the main goals of this project is the improvement of teaching quality by interlinking a large number of involved persons in different action fields throughout the university, as well on faculties as on university level, including the teaching staff and university´s administration.

Main target groups of the project

On the one hand, the main target group of this project are the students of the university during the whole student life cycle. On the other hand, the university´s staff and faculties are targeted by offering elaborated elements of human resources development and academic staff training. This finally leads to fostering the university´s organisational development.

How does the project contribute to learning innovations and learning quality?

As mentioned above, iQu contributes to quality improvement through activities in different action fields (for example "Academic Feasibility", "Higher Educational Development" and "eLearning"). During the presentation in the context of LINQ, the field of eLearning and the contributions of a central IT and media department is focused. Here, the quality of teaching and learning shall be fostered by the promotion of the use of innovative and multimedia-based teaching and learning methods.

What are the main outcomes of the project?

One of the main outcomes of the project will be the very intense interconnected structures throughout the university, the individual competencies gained by administrative and teaching staff and the developed didactical scenarios and structures incorporating the use of IT and multimedia – with the aim to facilitate learning and studying at the Heinrich-Heine-University.

A short quote: What is most important for learning innovations & quality today? Getting linked without getting chained!
More information about the iQu project is at: http://www.iqu.hhu.de

ISIP: Innovation Strategic Initiatives Platform for SME in children's product industries

Aim and objectives of the project:

The project will set-up an appropriate sectoral tool (ISIP platform) addressed to allow the SMEs managers of children's product industry to define their Innovation Strategic Initiative Plans, facilitating them with information, customised training, consultancy and monitoring in the process.

Main target groups of the project

SMEs managers in children's products industry, SME associations in this sector and consultants working in Innovation Strategic Initiatives planning.

How does the project contribute to learning innovations and learning quality?

In addition to the tailored training material and the tool for the definition of innovation strategic initiatives, ISIP will also include tutoring support to the learning process of key staff and two existing tools that will assist SME to assess themselves from an innovation standpoint:

- AIJU Competitive Intelligence System with external key sectoral data.
- IEP Innovation Management System for internal evaluation.

What are the main outcomes of the project?

Training modules on the required competences for each step and component in the process, a methodological guide to define the Innovation Strategic Initiatives Plan, ISIP multilingual online platform including the aforementioned.

A short quote: What is most important for learning innovations&quality today?

Providing specific and particularised knowledge timely and ubiquitously.

More information at: isip@aiju.info (actually under development).

KeyCoNet: European Policy Network on Key Competences in School Education

Aim and objectives of the project:

KeyCoNet (2012-2014) aims to identify and analyze initiatives concerned with Key Competence Development (KCD) in school education across Europe, produce grounded evidence, and formulate recommendations for policy and practice regarding the enablers and obstacles to its holistic implementation at all levels.

Main target groups of the project:

Policy makers at all levels in charge of curriculum reform, assessment, teacher training, learning resources and school organisation; school heads; inspectors; representatives of assessment bodies; teacher trainers; teachers' and parents' associations.

How does the project contribute to learning innovations and learning quality?

In order to meet complex social demands in today's competitive global economy, school education needs to develop students' key competences enabling them to apply knowledge to real-world contexts in preparation for work and life. The KCD approach requires: a shift in school culture; the provision of interactive learning environments enhanced by technology; newly evolving assessment methods including e-portfolios, and a focus on digital competence through which learners can develop a wide range of other competences. The network's evidence on the enablers and obstacles to various KCD approaches will be a source of inspiration for key actors innovating in the field across Europe.

What are the main outcomes of the project?

Updated literature reviews on the implementation and assessment of KCD; case notes describing innovative KCD initiatives; national and European KCD overviews; peer learning visit reports and videos illustrating KCD practice in schools; and recommendations for policy and practice on KCD implementation.

A short quote: What is most important for learning innovations & quality today?

Improving the quality, relevance and effectiveness of teaching and learning today requires an interconnected, holistic approach to KCD through innovative practice based on a social, active and constructivist conception of learning.

More information about the KeyCoNet project is at: http://keyconet.eun.org

LARGE: Learning Augmented Reality Global Envoriment

Aim and objectives of the project:

The LARGE- Learning Augmented Reality Global Environment- project creates a new type of learning environment that supports the educational institutions in delivering their curriculum in the most attractive and effective way.

The solution is innovative and will have strong capabilities for improving learning through ICT as it will merge graphics, audio, video, 3D objects into real time environment and will expand the users' knowledge, skills and experience.

Main target groups of the project

The project creates new type of ICT based learning that will meet the requirements of different educational sectors. The target groups are in Secondary and Higher Education, Vocational and Adult Training, so the focus is in Comenius, Erasmus, Leonardo da Vinci and Grundtvig sectors.

How does the project contribute to learning innovations and learning quality?

LARGE project builds global environment, based on Augmented Reality (AR) technology, simplifying the process of creating the content. The innovation is evident, because AR technology is currently not so much in use for educational purposes due mainly to its complex nature. Learning quality is improving, because the learners are engaged much more with all of their senses and kinetic.

What are the main outcomes of the project?

1.Software platform, very easy to use, for creating marker AR educational applications under Windows OS.

2.A community of AR creators and users, integrated in one place.

3.Public accessable AR educational projects.

A short quote: What is most important for learning innovations & quality today?

Attractiveness and better knowledge.

More information about the LARGE project is at: http://largeproject.eu/

LEPHIE: Leaders for European Public Health

Aim and objectives of the project:

Leadership for European Public Health (Lephie) Project is to develop a Problem-based, Blended Learning Leadership curriculum for European Public Health professionals. The curriculum is competence-based, embedded in the Public Health (PH) paradigm, reflecting core PH functions. It is specifically related to European Public Health agenda and the way it is carried out at EU, Euregional, and national and community level. It aims at the development, mastering and enhancement of leadership competencies. The course is supported by modern on-line technology such as: Elluminate (a web-conferencing program), Skype (a software application for voice and video calls and chat over the internet) and Blackboard or Moodle (learning management systems).

Main target groups of the project:

The project aims to benefit PH professionals, tutors/teachers, lecturers and partner universities. It also targets PH employers, PH professional organizations and decisionmakers at higher education establishements.

How does the project contribute to learning innovations and learning quality?

It is a good example of optimising blended learning and problem based learning and the developed curriculum is clearly designed with busy professionals in mind.

What are the main outcomes of the project?

(1) The curriculum on leadership for European PH professionals including educational interactive e-learning materials in a Problem-based/Blended Learning (PBL/BL) format in EN,DE,LT,NL. (2) trained staff in partner institutions in blended learning courses, (3) evaluation of the effectiveness of the PBL/BL practice, quality assurance mechanisms, (4) educational blended learning network comprising partner countries, final conference, (5) a central repository (interactive web-page www.lephie.eu), scientific publication(s) conferences workshops.

A short quote: What is most important for learning innovations & quality today?

Teamwork, coordination and development of leaders who will introduce technological innovation and change.

More information about the **Lephie** project is at: http://www.lephie.eu

MAJMIN: Major competencies to manage minor offenders

Aim and objectives of the project:

The **aim** is to increase the specific professional training provisions that will enforce the involvement of different parts involved in the management of juvenile crime, for a better response to the needs for social inclusion of minor offenders.

Objectives are:

1. To upgrade the professional competencies by specific professional training of different categories directly or indirectly involved in the management of juvenile criminality and in the assistance of minor offenders

2. To endow the family members with specific competencies

3. To increase the functionality and inter-operability of the structures that manages the juvenile crime

Main target groups of the project:

Professionals directly involved in juridical assistance, penalty assistance, social assistance, pedagogical assistance, psychological assistance, medical care; family members that should take care of minor offenders.

How does the project contribute to learning innovations and learning quality?

By building up a curriculum and a set of training provisions oriented toward transversal learning outcomes.

What are the main outcomes of the project?

Research Report; EQF based curriculum for VET training of professionals; VET provisions; Training course; International symposium under EfVET

A short quote: What is most important for learning innovations & quality today?

Tailor-made training provisions focusing the specific needs of the final users.

More information about the MAJMIN project is at: http://www.majmin.eu

MIRIADI: Mutualisation et Innovation pour un Réseau de l'Intercompréhension à Distance

Aim and objectives of the project:

The project aims at developing a permanent dissemination network of learning and teaching programmes in Intercomprehension (IC) within groups of learners and/or teachers in different training stages and through the use of Web 2.0 technology.

Main target groups of the project

Primary and secondary schools, university students and learners in lifelong training, involving both European and Latin-American partners.

How does the project contribute to learning innovations and learning quality?

The computing environment plays a decisive role in the training. The device will be conceived as a free licence, available to other communities of teachers and researchers.

What are the main outcomes of the project?

The creation of a network for international online learning and teaching of Intercomprehension, as well as the development of a syllabus, contents and modalities (work environments).

A short quote: What is most important for learning innovations & quality today?

Equity, accessibility of knowledge, sharing of resources.

More information about the MIRIADI project is at:
http://www.miriadi.net

My Story: Creating an ICT-based inter-generational learning environment

Aim and objectives of the project:

- To raise awareness on the potential of ICT and life experience to bridge the intergenerational gap
- to create an online repository of digital life stories that document elements from participants' lives
- to change the perception of all social and professional categories involved (seniors, young people at risk of social exclusion due over-exposure to the internet, staff and trainers from adult learning and retirement homes) as being marginalised and / or demotivated

Main target groups of the project

- Elderly people
- Representatives of the young generation, internet savy

How does the project contribute to learning innovations and learning quality?

- It valorises life experience illustrated in the films produced
- It underlines the individual potential of each participant and the importance of awareness (self and social) in personal and professional development

What are the main outcomes of the project?

- Support materials for trainings (IT Mentors's training, My First Internet Experience Training, Digital Storytelling Kit)
- Online database with raw interviews and processed materials
- Gallery of stories
- Intergenerational activities

A short quote: What is most important for learning innovations & quality today?

- Encouraging individualised and individual study
- Valorising individual potential
- Streaming awareness, knowledge and competences towards individual continuous development

More information about the MyStory project is at: http://www.mystories.eu

OLAREX: Open Learning Approach with Remote Experiments

Aim and objectives of the project:

The main goal of the project is to innovatively implement ICT-based learning materials, remote experiments, and e-didactic methods into formal and non-formal lifelong learning settings. It will enhance and modernize science, technology, engineering and mathematics curricula, foster student creativity and motivation, and develop professional skills and insights about the impact of evolving technologies.

Main target groups of the project:

secondary school teachers and their students, museum employees

How does the project contribute to learning innovations and learning quality?

The fundamental benefit of the project is offering to secondary schools remote labs - an university laboratory equipment, and supporting multilingual e-didactic ICT training. The non-traditional use of remote experiments – interactive part of the museum exhibition - is as well an innovative element of the non-formal STEM learning.

What are the main outcomes of the project?

Improved competence of teachers and museum employees, participated in OLAREX training; equipped with technology resources – remote laboratory and e-didactic learning materials. Organized exhibition with remote experiments.

A short quote: What is most important for learning innovations & quality today?

Highly qualified and inspired teachers are a key element of learning innovations

More information about the OLAREX project is at:
http://www.olarex.eu/

Organic.Lingua

Aim and objectives of the project:

Organic.Lingua aims to enhance Organic.Edunet portal with educational content on Organic Agriculture and Agroecology, introducing automated multi-lingual services that will further support the uptake of the portal from its targeted audiences, facilitate the multilingual features of the portal, and further extend its geographical and linguistic coverage.

Main target groups of the project:

European multilingual level content seekers: educators, students, researchers, general public, content providers (NGOs, Businesses), and information evaluators (decision makers, academic institutions, professionals).

How does the project contribute to learning innovations and learning quality?

Organic.Lingua covers the full learning resource curation lifecycle, which opens opportunities for innovating both in digital description and preservation practices and also in finding specificities of the use of language technologies. The project is thoroughly analyzing the user interaction needs for translation of metadata and ontologies in a practical and real-world setting. This represents an opportunity to advance in the knowledge about the application of language technologies and cross-lingual search, with an emphasis on effectiveness and cost-effectiveness.

What are the main outcomes of the project?

The main outcome will be an automated multi-lingual service that will facilitate the usage, exploitation and extension of digital educational content related to Organic Agriculture and Agroecology.

A short quote: What is most important for learning innovations & quality today?

Make learning accessible and easy to everyone, and breaking language barriers is one of the steps.

More information about the Organic.Lingua project is at:

http://www.organic-lingua.eu

POERUP: Policies for OER UPtake

Aim and objectives of the project:

POERUP aims to study the end-user–producer communities behind OER initiatives. By comparing in-depth European case-studies to selected non-European ones POERUP will refine and elaborate recommendations to formulate a set of action points that can be applied to ensuring the realisation of successful, lively and sustainable OER communities. A specific objective is to help readers in charge of OER initiatives to find ways of incorporating successful features of other initiatives.

Main target groups of the project:

Education authorities, the research community and OER initiative management

How does the project contribute to learning innovations and learning quality?

POERUP will provide *trustworthy and balanced research results*, in which feedback from all stakeholder groups has been incorporated and which can be used as standard literature.

What are the main outcomes of the project?

Three EU-wide policy papers – for schools, for universities, and for colleges and other organised education providers – on how to foster OER uptake.
Seven options brief packs for EU nations/regions:
UK (England, Wales and Scotland separately); Netherlands; Italy; Hungary; France

A quote: What is most important for learning innovations & quality today?

„Research is needed to understand how governments can stimulate the uptake of OER by policy means."

More information about the POERUP project is at: http://www.poerup.info/

ProfDRV: Professional driving - more than just driving!

Aim and objectives of the project:

The project aimed to explore ways to support the realisation of directive 2003/59/EC on a common minimum vocational qualification for professional drivers across Europe with the support of the EQF.

Main target groups of the project

Policy makers; VET practitioner concerned with professional driver training

How does the project contribute to learning innovations and learning quality?

The project developed an example and related quality standards for a high-quality implementation of the EQF with all its elements and on all didactical levels. It illustrates innovative solutions how common qualification standards can be reached Europe-wide under consideration of the heterogeneity of the European VET systems and with the facilitation of the EQF.

What are the main outcomes of the project?

_An EQF-compatible core profile of the occupation professional driver

_A set of quality standards for the implementation of professional driver training

_Recommendations for the realisation of a common Europe-wide minimum qualification standard for professional drivers also usable as a role model

A short quote: What is most important for learning innovations & quality today?

Most important is the definition of what learning quality and innovation actually mean because different criteria can lead to very different results.

More information about the ProfDRV project is at:
http://www.project-profdrv.eu

Promoting Matching Competences in Language Training

Aim and objectives of the project:

The project sought for solutions to address the mismatch detected in several language courses between the certification/ accreditation of qualifications obtained and the real needs both of the course promoter and the learners.

Main target groups of the project

Main target groups are language learners and teachers and language course contractors. An estimation of the number of language learners gathered yearly by the 6 partners implementing the project is more than 12.000 in different levels.

How does the project contribute to learning innovations and learning quality?

The project incorporates up to six different influence areas connected with the development of linguistic competences and skills. The approach of the project has been recognised as the more innovative aspect, since it combines linguistic and metalinguistic (psycholinguistic, sociolinguistic, intercultural and pragmatic) elements contributing to match the competences gained by the learner and the expectations of the language course promoter. Follow-up of the research in the field is ensured through the new EU project Precolt.

What are the main outcomes of the project?

The main outcome of the project is the publication of a Guide of Recommendations, aiming at supporting language course designers and practitioners to match language training offer and demand according to the expectations of language course promoters and learners.

A short quote: What is most important for learning innovations & quality today?

Adapting learning to the practical expectations of course promoters and learners is the driving force for successful innovation and quality in learning.

More information about the Promacolt project is at: http://www.promacolt.eu

PUMO: Educational Support for PUpils on the MOve

Aim and objectives of the project:

PUMO aims to develop a system (teacher training course & know-how) to enable pupils away from their home country to maintain their progress in homeland specific subject areas and to monitor their progress in other subjects to ensure that they can re-integrate with their original cohort when they return home.

Main target groups of the project:

Main target groups of the project are pupils living (temporarily) abroad. The PUMO training course will be used primarily by teachers where some pupils leave temporarily to move abroad.

How does the project contribute to learning innovations and learning quality?

PUMO develops learning solutions not only focusing on its primary target group but also providing a methodology that can be used in other learning situations.

What are the main outcomes of the project?

Main outcomes of this project are teacher training course, know-how and a social network of teachers and pupils living (temporarily) abroad.

A short quote: What is most important for learning innovations & quality today?

Today more attention is/will be paid on skills how to collect information, think critically and how to use knowledge gained during the learning process.

More information about the PUMO project is at:

www.pumo.info

Q4I: Quality for Innovation in European Schools

Aim and objectives of the project:

The Q4I project, which started in December 2012, aims to **develop, test and mainstream a quality development approach for schools that includes a strong commitment to innovation and that is based on the participation of all key stakeholders**: students, teachers and parents, employers and representatives of local community. Q4I is funded by the LLP Programme of the European Commission and is led by the Generalitat de Valencia and by the MENON Network, with the participation of two paneuropean networks such as the European Foundation for Quality in eLearning and the European School Heads Association and four research institutes.

Main target groups of the project:

The project is mapping schools development models that have proven to work to embed pedagogical and organisational change, to then develop a supportive approach for school innovation that goes beyond quality as compliance and enhances innovation, participation and excellence. This approach will be validated in a real-life school contexts in 25 schools in five European countries: these schools will represent the core of the Q4I Network for Institutional School Innovation committed to sustain the project results and to promote the Q4I approach among all interested stakeholders.

What are the main outcomes of the project?

The main **expected results** of the project are a comprehensive report on European school innovation models, a development model for schools in Europe aiming at increasing innovation though open approaches to quality, a Conference on innovative schools development through quality, the Q4I Manifesto forquality through innovation in European schools and the Q4I schools network, a meta-network facilitating knowledge exchange among grass-roots innovators along the Q4I innovation dimensions.

A short quote: What is most important for learning innovations & quality today?

For the Q4I project, the most important thing for learning innovation and quality assurance is to keep these aspects together, since innovation can improve quality approaches making them fit for the schools of today and tomorrow, and at the same time quality assurance can ground learning innovation in the schools improvement processes and daily life.

More information about the Q4I project is at: http://www.q4i.eu.

QEduSen: Evaluation toolkit on seniors' education to improve their quality of life

Aim and objectives of the project:

- To offer a scientific framework for the relationship between education and quality of life amongst the elderly
- To increase the skills of staff, technicians and teachers working in education for senior citizens
- To produce a positive impact on seniors' lives through education

Main target groups of the project

1. Educational institutions: staff, managers, trainers (direct impact)
2. Academia (researchers) and decision-makers
3. Senior learners (who will be impacted thanks to the quality improvement of the education offered by the institutions)

How does the project contribute to learning innovations and learning quality?

a. By producing an evaluation toolkit that can be used by educational institutions, not only to improve the educational process for elderly learners but also as a method of accreditation
b. By producing a guide that can be used to learn more about pedagogy for senior learners with practical examples and best practices.

What are the main outcomes of the project?

The main outcomes are (1) a practical guide for institution staff aimed to increase their knowledge and competences and (2) a practical evaluation toolkit designed to assess an educational process by identifying areas for improvement, and provide recommendations and accreditation.

A short quote: What is most important for learning innovations & quality today?

Quality tools and innovations must be easily transferable and applicable, as well as being useful and providing added value to the institution

More information about the QEduSen project is at: http://www.edusenior.eu

QUALOBSTER: Quality Assurance in Learning Organisation in the Banking & Financial Sector in Europe

Aim and objectives of the project:

Improving the quality of training provisions in the Financial Service Sector (FSS) in Europe, integrating the existing benchmarking approach and tools for the Learning Organisation with Quality Assurance principles and methods.

Main target groups of the project:

Trainers, H. R. Specialists, Professionals working for the promotion of the Learning Organisation in H. R. and Organisational Development Departments in the FSS and also addressed the needs of employees who will benefit from the improved training provisions.

How does the project contribute to learning innovations and learning quality?

Learning is a process that implies change. Change in its positive attribution of value means growth, evolving into something better. The Laboratory of Innovation intends pursue this objective: Learning as an experience which will bring positive change, therefore innovation.

What are the main outcomes of the project?

The 'Laboratory of Innovation' (innovative web-based Virtual Community of Practice) to foster the exchange of ideas and best practice between the various involved actors, to facilitate the sharing of resources such as documents, texts, questionnaires and make them accessible to the whole virtual community.

A short quote: What is most important for learning innovations & quality today?

The 'Laboratory of innovation' brings together Member States, Social Partners and the European Commission to promote European collaboration in developing and improving quality assurance in VET by using the European Quality Assurance Reference Framework (EQARF - Racc. 2009/C).

More information about the QUALOBSTER project is at: www.qualobster.eu

RURAL/ITER: Reintroduction Upon Rural Agricultural Lands of Innovative Training for Entrepreneurs on Return

Aim and objectives of the project:

RURAL/ITER is an ongoing LdV Transfer of Innovation (TOI) from Naturaliter project, granted in 2012, based on innovative trends in farming and last changes of Common Agriculture Policy, new opportunities in rural areas are concerned, mainly from "green economy" , farm management and multifunctional activities.

Main target groups of the project

Young and female farmers and agricultural entrepreneurs from other sectors, are new target groups to enhance entrepreneurial opportunities in the rural areas.

How does the project contribute to learning innovations and learning quality?

Starting from the description of work processes, skills needed are examined in relation to the competence level, from 1 to 5, based on European Qualifications Framework (EQF). New modules are linked to the previous "Naturaliter" training platform by an implemented library, "ruralpedia", with case studies and key words connected to best practices. The interactive library is managed as a database from where the user can download training courses and adapt contents and figures to create a business plan for own innovative farm.

What are the main outcomes of the project?

Main outcomes of the project are interactive modules based on the most innovative trends in agriculture, implemented with web services.

A short quote: What is most important for learning innovations & quality today?

Learning innovation needs the most innovative and popular communication tools. Directly involved users, user friendly tools, web services and quality contents revised by experts can provide together the best options.

More information about the RURAL/ITER project is at:

http://www.ciaumbria.it/naturaliter *("ruraliter" website is under construction)*

http://www.agricolturavita.it/cipat/svl/documentiRead?doc_id=33291&tpl_id=7

SiLang: Serious Games for Situated Learning of Vehicular Languages Addressing Work Needs

Aim and objectives of the project:

To meet work objectives, professionals rely on vehicular languages, such as English, German, or French. While professional training programs strive to bring language competency to working levels, many fail to address the diverging use of a 'lingua franca' with its own variations, specific localized expressions and communication norms. siLang aims to reinforce language competence relevant to the workplace situated language training that applies serious games and familiarizes learners with cultural, societal, and work aspects in various contexts.

Main target groups of the project:

Students in higher education, vocational workers, professionals and trainers.

How does the project contribute to learning innovations and learning quality?

siLang innovation lies in a combination of situated learning with serious gaming for adaptive vehicular language learning.

What are the main outcomes of the project?

The main project outcomes are foreseen to be: a situated, mobile-enabled serious game for language learning on business communication; adaptable learning activities that immerse learners into rich cultural and work related experiences; good practices on deployment targeting trainers.

A short quote: What is most important for learning innovations & quality today?

'Meaningful, contextually- based and enculturated learning experiences can lead to a learning innovation promoting learning quality today'.

More information about the siLang project is at:
http://www.si-lang.net

SoNetTE: Social Networks in Teacher Education

Aim and objectives of the project:

To give open access to teacher education courses that are of special interest for (student) teachers in different countries, like subject didactics courses and pedagogical courses that reflect a very specific idea, debate or development in that area that cannot be found in teacher education in general. An element in these courses is participatory research by each member of the course in study groups.

Main target groups of the project

Student teachers, in-service teachers (experienced teachers) and teacher educators/researchers.

How does the project contribute to learning innovations and learning quality?

The project uses social networks and other internet tools to organize participatory research between teachers in different countries.

What are the main outcomes of the project?

A methodology for how to support experienced teachers and student teachers to participate actively in international research and improve their professional development.

A short quote: What is most important for learning innovations & quality today?

Innovational education starts with inspired teachers.

More information about the SoNetTE project is at:
http://www.jomite.eu/sonette (not yet available)

SPEAQ: Sharing Practice in Enhancing and Assuring Quality

Aim and objectives of the project:

This project aims to address the need for a better and more inclusive dialogue between different stakeholders in the quality assurance process and is developing new and practical tools and strategies to support this. It is using ideas and expertise developed on a previous EU project, LanQua in addition to creating new initiatives informed by stakeholders in the quality process. This will bring together formal (mostly explicit) and informal (generally implicit) quality practices. It is collecting views and opinions (data) from the key stakeholder groups which are leading to practical projects which translate the findings from the data collection exercise and workshops into concrete actions (mini-projects).

Main target groups of the project

The project is aimed at connecting teachers, students and quality managers (3 quality circles).

How does the project contribute to learning innovations and learning quality?

The project is contributing information on the views and experiences of the quality process from its 3 stakeholder groups, it has also developed a workshop which can be used to initiate discussion on this theme as part of staff professional development and is offering a series of tested 'solutions' to quality issues raised by stakeholders through the mini-projects.

What are the main outcomes of the project?

The outcomes will be practical and replicable strategies to support universities foster a more inclusive approach to quality assurance.

A short quote: What is most important for learning innovations & quality today?

Getting engagement from the grassroots as well as management level.

More information about the SPEAQ project is at:

http://speaqproject.wordpress.com/about/

TC4PI: Teacher Competences for Plurilingual Integration

Aim and objectives of the project:

Aim: to design a teacher education framework for developing teachers´ competences for integrating plurilingual and intercultural competence.

Objectives: to create a network of schools for the exchange of best practice; to foster exchanges and communication among language teachers from different countries; to guide pre- and in-service teachers´ observations by using a Virtual Learning Environment (VLE) and job shadowing.

Main target groups of the project:

Pre-service and in-service teachers of modern languages.

How does the project contribute to learning innovations and learning quality?

It contributes by promoting a reinforced cooperation and collaboration between teacher training institutions, schools and Higher Education. The use of modern digital technologies, VLE, as a tool for reflection and dialogue between teachers and trainers, contribute as well to learning innovation and learning quality.

What are the main outcomes of the project?

A European Network of schools and a Framework Document on teachers´ intercultural competences for plurilingual education (TC4PI).

A short quote: What is most important for learning innovations & quality today?

The improvement of education and teacher training in a lifelong learning continuum, and a closer collaboration, at an international level, between institutions in charge of education and teacher training.

More information about the TC4PI project is at: http://www.tc4pi.eu/web/

THESEIS: Training on Health and Safety for workers in the Environment Industrial Sector

Aim and objectives of the project:

THESEIS aims at developing an appropriate e-learning training model in the field of occupational Health and Safety (H&S) of individuals working in the pollution management sector of eco-industry. The project seeks to determine the competences, skills and attitudes that the particular workforce needs to acquire and to address these using innovative pedagogical approaches and practices.

Main target groups of the project:

THESEIS target groups, include: Workers occupied in the pollution management sector, Vocational education and training providers in the field of environmental protection and occupational H&S, Associations and Chambers of companies activated in the sectors of pollution prevention and environmental management.

How does the project contribute to learning innovations and learning quality?

The present project is characterized by a considerable degree of innovation, due to a) the specific subject that it deals with, b) the implementation method and the methodology foreseen to be followed and c) the design of the learning outcomes and training modules. THESEIS will develop the associated learning tools based on VCP technology.

What are the main outcomes of the project?

THESEIS will: assess training gaps in the area of concern, investigate the National Qualification Frameworks, identify training objectives and designate learning outcomes, produce the appropriate training model, promote the sustainable use of the project's outcomes via networking and simulating key market stakeholders.

A short quote: What is most important for learning innovations & quality today? Good design, engagement of latest - innovative IT applications and learning tools, development of modules that enhance the active participation of the trainees.

More information about the THESEIS project is at:

http://www.theseis-training.eu

TRACON: Training teachers in developing consumer awareness among children

Aim and objectives of the project:

The TRACON project aims at training teachers via lifelong learning in order to help their students become 'smart' and rational consumers.

Main target groups of the project

The main target group are primary and secondary school teachers. Additional target groups are their students and students' parents.

How does the project contribute to learning innovations and learning quality?

Educational programs focusing on consumer awareness and behaviour are not common in the school curricula in Europe. Moreover, only few school-teachers are trained to provide their pupils with knowledge and skills in order to help them become rational consumers of goods, services and natural resources. TRACON is a lifelong learning project which fills this gap using distance training (e-learning).

What are the main outcomes of the project?

The main outcomes of the project are: the revision of national legislations on consumer rights and protection and of national curricula of each school partner, development of training material for teachers, implementation of a pilot-training for selected teachers from participating countries via an e-learning course and development of ICT applications for teachers, students as well as the general public.

A short quote: What is most important for learning innovations & quality today?

A most important aspect of learning is the enhancement of civil competencies, in particular with respect to social integration and environmental sustainability.

More information about the TRACON project is at: http://www.tracon-project.eu (517562-LLP-1-2011-1-GR-COMENIUS-CMP)

TRAILER: Tagging, Recognition and Acknowledgment of Informal Learning ExpeRiences

Aim and objectives of the project:

The main objective is to incorporate the consciousness of informal learning as part of an individual's development; this starts with the identification by the learner of informal learning activities and the subsequent process in which these are made visible to the institution. This task will be done by developing methodologies and tools that will facilitate this process, making it transparent both to learners and institutions and allowing all the stakeholders involved to take the most of these processes.

Main target groups of the project:

Employees, companies, students and Higher Education Institutions.

How does the project contribute to learning innovations and learning quality?

By providing with a framework for a comprehensive view of learning (both formal and informal) and the acknowledgement of skills and competences by individuals and companies, in order to better recognize the learning needs.

What are the main outcomes of the project?

The definition and application of methodologies and recommendations for the integration of informal learning in educational institutions and the workplace.

The establishment of the technological framework for managing competences.

The development of a tool for individuals to easily collect data about the skills and competences they possess, as so as for managers to monitor and report how their employees' profiles fit the needs of their organisations.

A short quote: What is most important for learning innovations & quality today?

To evolve from lifelong learning to learning self-consciousness regardless of its origin.

More information about the TRAILER project is at: http://trailerproject.eu

TRANSversal key competences for lifelong learning: TraIning teachers in competence based education

Aim and objectives of the project:

The aim of TRANSIt is to help teachers acquire and reinforce such skills and knowledge so that they can design and implement cross-curricular activities that support the key competence acquisition of their students. Also, TRANSIt aims to support teachers in utilising ePortfolios particularly in the area of formative assessment. Moreover, the project aims to raise the awareness of the administrative staff of schools in order to support teachers in bridging the gap between policy and practice (e.g. curricular reforms).

Main target groups of the project

Teachers (in-service, pre-service), teacher educators, educational policy makers, school leaders, school ICT support staff

How does the project contribute to learning innovations and learning quality?

Development of an innovative Training Framework/a systematic evaluation methodology

What are the main outcomes of the project?

TRANSIt Training Framework; 2-phases piloting; Workshop on "Challenges in Training Teachers about Key Transversal Competences"; TRANSIt Guide of Good Practice.

A short quote: What is most important for learning innovations & quality today?

Authentic learning and assessment; Ensuring access, equity and opportunity for all students/learners; a framework for teaching and learning that addresses the widest possible variety of learning needs, styles, and preferences.

More information about the TRANSIt project is at: www.transit-project.eu

TRECVET: Transnational Recognition of European Certification in Vocational Education and Training

Aim and objectives of the project:

In the Small Commercial Vessel maritime sector qualifications are not recognised between Member States. TRECVET has developed software that presents information on commonalities, differences and country specific requirements. The software can accept syllabi from any VET industry enabling decision makers to implement ECVET principles related to study, career paths, job placements and mobilities.

Main target groups of the project:

Decision makers, competent bodies, authorities, students, professionals, trainers, institutions, SMEs and VET organisations.

How does the project contribute to learning innovations and learning quality?

It demonstrates workers can be become mutually acceptable with the minimum of re-training and assessment.

What are the main outcomes of the project?

A methodology and software tool to extract Fundamental Elements from syllabi. A scalable data base and a software tool to compare and present this data publicly.

A short quote: What is most important for learning innovations and quality today?

Transparency, training, trust and tolerance.

More information about the TRECVET project is at: http://www.trecvet.eu

UPCaring

UPCARING: Upgrading care services with innovative skills certification, e-learning and matching systems

Aim and objectives of the project:

Improve professionalism of home care workers and enhance their chances of employment

Main target groups of the project

- Home care workers (both aspiring and alredy practicing)
- Intermediate professionals (welfare service / employment service operators)

How does the project contribute to learning innovations and learning quality?

UPCARING provides a new-concept, all-round approach to home care workers' professionalization offering 3 integrated environments: e-learning, validation of prior learning, demand/supply matching of home care work.

What are the main outcomes of the project?

- UPCARING e-learning system
- UPCARING validation of prior learning system
- UPCARING demand/supply matching system for home care work

A short quote: What is most important for learning innovations & quality today?

Being focused, being visual, being social.

More information about the UPCARING project is at:
http://www.upcaring.eu

Vegucation: Training in sustainable, healthy and plant-based nutrition for chefs and caterers

Aim and objectives of the project

In the gastronomical sector, the trend for sustainable and healthy meat-reduced cuisine is meanwhile overarching. In order to improve competitiveness in catering an adaptation to this changing demand is required, while current vocational training of catering staff only poorly considers these trends. Based on an extensive analysis stage the project creates an ECVET standardized curriculum, teaching material and training for a.) usage within primary vocational education and b.) as a distinct additional training as vegetarian cook. This pilot project is run in two vocational and two supplementary training schools in the Dutch and German language community respectively.

Main target groups of the project

The project addresses a) teachers by training them, b.) students by an ECVET-standardized curriculum and teaching material, c.) policy makers of VET institutions for certifications and d.) social partners and chambers for dissemination and commercialization.

How does the project contribute to learning innovations and learning quality?

The project improves the established VET for caterers by new learning contents and innovative learning-field oriented, ICT-based and multimedia teaching materials. It also creates a new chamber certified supplementary training for accomplished chefs.

What are the main outcomes of the project?

Based on an extensive analysis stage the project develops a transnational vocational training concept including the curriculum for a 100-lesson-module, teaching materials in five language versions as well as test stages online and in focus groups.

A short quote: What is most important for learning innovations & quality today?

Innovative and high-quality VET responds reliably to ever-changing customer demands by contemporary methodology and certification.

More information about the vegucation project is at: www.vegucation.eu

V.IN.T.AG.E.: Valorisation of INnovative Technologies for AGing in Europe

Aim and objectives of the project:

V.IN.T.AG.E aims to make ICT more accessible and attractive, promoting benefits to the quality of life and independence of the elderly from ICT, as well as including local stakeholders from different fields of the society in order to create a European network which might exploit project results even in the future.

Main target groups of the project

Elderly people

How does the project contribute to learning innovations and learning quality?

Equipping senior citizens with the skills that they need in order to cope with change and remain active in society

What are the main outcomes of the project?

A dedicated software and training course for elderly people; an online database for the exchange and rehabilitation of used PCs

A short quote: What is most important for learning innovations & quality today?

Learning and teaching customization

More information about the project is at:

http://www.vintageproject.eu

VINTAGE: Online tool for self eValuatIoN of key competences in adulT AGE

Aim and objectives of the project:

to improve the culture of key competences and of self assessment, to develop and test an online tool for the self-assessment of the key competences, to adapt and transfer self-assessment approaches, tools and strategies already existing at European level, to create a "basic portfolio" to be adopted as a guide for the effective completion of the sections of key competences in the EUROPASS CV.

Main target groups of the project: Trainers, Experts and Learners in NVAE.

How does the project contribute to learning innovations and learning quality?

Only few experiences can be cited about the implementation of self-assessment practices within adult education system, particularly with reference to the self-assessment of key competences, and no one online tool of self-assessment of key competence can be still cited. The Europass CV format includes sections for the recording of Digital Competences, or Social competences, but differently from the description of foreign language competences, specific descriptors still lack for the description of these Key Competences.

What are the main outcomes of the project?

Framework for description of key competences, with a set of indicators and descriptors for the assessment of each key competence; a checklist to guide the self-assessment according to standardized levels; Digital tool for self assessment; a basic portfolio; an easy guide.

Short quote: What is most important for learning innovations & quality today?

"Key competences are the foundation for lifelong learning and success in individuals' careers and professions. The development of key competences has to continue beyond compulsory education, in both initial and continuing VET. [...] The challenge is to achieve the best possible combination of vocational skills and key competences both to a high standard" (Communication from the Commission to the European Parliament - 2011).

More information about the VINTAGE project is at: http://vintage.euproject.org (527349LLP120121IT GMP-2012-4192/001-001)

VoiceS

Aim and objectives of the project:

The Voice of European TeacherS (VOICES) is a network in the field of education.

The VOICE of European teacherS (VOICES) helps schools to implement European key competences in particular competence 7: the sense of initiative and entrepreneurship.

Main target groups of the project

Partners are 10 teacher-training institutes (Colleges and Universities). 65 schools for primary and/or secondary education and 7 other institutes in the field of education.

How does the project contribute to learning innovations and learning quality?

The VOICE of European TeacherS (VOICES) makes the key competences work in the: **VOICES** network Teachers should be able: To work with

- **O**thers: they work in a profession, which should be based on values;
- **I**nformation, knowledge and technology;
- **C**ollective intelligence of learners and **C**o-operate and **C**ollaborate with colleagues;
- And promote mobility and co-operation in Europe, and **E**ncourage intercultural respect and understanding.
- **S**ociety: they contribute to preparing learners to be responsible as EU citizens

What are the main outcomes of the project?

A structure of a master program, an international platform and the development of innovative ICT-based content, services and pedagogies

A short quote: What is most important for learning innovations & quality today?

International collaboration and reflection

More information about the VoiceS project is at:

http://www.european-teachers.eu

B.E.S.T: Bringing Europe to School Teachers

Aim and objectives of the project:

B.E.S.T aims to train Greek primary education teachers in the field of European integration studies with the use of ICTs. Moreover, it facilitates the wide spreading of the existing EU teaching material and games (i.e. Teachers' and Kids' Corner) as well as the development of new ones.

Main target groups of the project

The target audience is 125 primary school teachers, postgraduate and doctoral students and consequently their pupils and families. Taking into consideration that the average primary school class in Greece has 25 children, 3125 pupils and almost 12,500 citizens will benefit.

How does the project contribute to learning innovations and learning quality?

B.E.S.T raises awareness on EU issues through an interdisciplinary approach. Teachers are familiarised with EU informative sites and the use of web 2.0 tools in order to be able to transfer the EU knowledge to pupils through play, interactivity, creativity, the use of computers and the internet.

What are the main outcomes of the project?

The trainees will act as knowledge multipliers on EU issues within their schools and their professional and local communities. An e-book and an online game will be developed.

A short quote: What is most important for learning innovations & quality today?

The 5 "I"s: Interactivity, interdisciplinarity, Invention, ICT, Improvement

More information about the B.E.S.T. project is at:
http://www.bestunipi.eu/

Author Index

All authors in alphabetic order

Author Index

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Alexey Abramov is a candidate of physical and mathematical sciences (2003), an assistant professor in Saint Petersburg State Polytechnic University (since 2004). He teaches courses on parallel computing, UNIX systems, computational fluid dynamics. He is a head of Information System Department of St. Petersburg Branch of the State Institute of Information Technologies and Telecommunications "INFORMIKA; main working fields are educational internet resources, digital libraries, databases. He is involved in development and maintenance of informational and educational portals such as "Single-Entry Window" (window.edu.ru), "ICT in Education" (ict.edu.ru). He has published over 50 journal articles and conference papers on the fields of information technologies and computational fluid dynamics.

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Mario Barajas Frutos is Professor at the Faculty of Pedagogy of the University of Barcelona. He leads Future Learning (http://www.ub.edu/euelearning) an initiative at the University of Barcelona aimed at developing research in the educational, cultural and socio-economic aspects of the use of digital technologies in learning; the research promotes synergies with different disciplines in rethinking knowledge conceptions and knowledge production in the multidimensional spaces that define the European culture of the XXI century. With a background in Engineering, Philosophy and Education, Dr. Barajas was former secondary education teacher in the area of math and experimental sciences. During the last twenty years he has coordinated and participated in

many EU-funded projects (SOCRATES-MINERVA, LLP, FP6, FP7) in the area of learning technologies, evaluation of learning innovations, and lifelong learning policies. He has published several books and scientific articles, and belongs to different European research networks.

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Dr Bruce is a sociologist who studied in Los Angeles, Galway, Amsterdam and Hull. He has lectured in France, England and Ireland and worked in research for the European Commission in Brussels. In Ireland he was responsible for national initiatives in professional development in the disability sector. He is a long-standing member of the *European Distance and E-Learning Network*, the *Irish Institute of Training and Development,* the *National Council for Rehabilitation Education* and the *California Scholarship Federation.* He has published widely on the social impact of disability, labor market policy, innovative education, distance

learning, social inclusion, conflict transformation, strategic change and managing diversity. He is involved in innovative transformational school systems and is National Coordinator for the *Open Discovery Space* program in Ireland. In 2010 he was elected Vice-President of EDEN.

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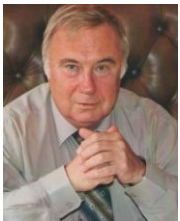
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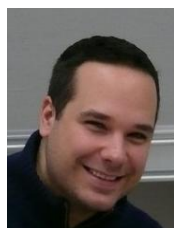
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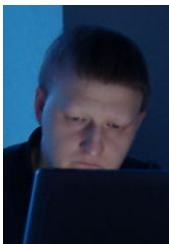
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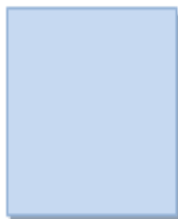
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Within Future Learning, she has been involved in various EU funded projects, such as EFELSE (LLP-KA1), ProActive (LLP-KA3), SCeTGo (LLP-KA3) and Pathway (FP7) projects. Currently, she is actively involved in Block Magic.

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Premysl Velek is part of the STEM education team, working mainly on the Scientix project (www.scientix.eu). Premysl has been active in science communication and science education for over 7 years. Before joining EUN, he worked as Communications Officer at Academy of Sciences of the Czech Republic and later at European Science Foundation in Strasbourg, France. He was also involved in several EU funded science outreach projects (EC Framework Programmes, European Social Fund). Originally from the Czech Republic, Premysl holds Master degree in social sciences from the Masaryk University in Brno, Czech Republic.

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Wouter Vollenbroek is project researcher at the University of Twente. His expertise concerns co-creation as a collaborative learning and designing method within on- and offline channels. His research topic focuses on the question of how we can understand the development, implementation and use of these co-creation processes and what factors contribute to the effects of these processes. Other interests are social media innovation, social media behaviour and social media measurement.

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Patricia Wastiau is Principal Adviser for Research & Studies within European Schoolnet, the network of 31 ministries of education supporting innovation in education including through ICT integration. After 10 years as Head of *Eurydice*, the European network on education in Europe, Patricia Wastiau has joined *European Schoolnet* in 2008. She has more than 20 years of experience in education systems and public policies analysis, their comparison at European level and the use of research results in education policy-making. More recently, she has coordinated studies on virtual learning environments, scailing up innovation, and comparative indicators on the use and impact of ICT in education throughout EU countries. She regularly participates to experts and working groups organised by the European Commission and OECD.

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Dr. Evridiki Zachopoulou is a professor at the Department of Early Childhood Care & Education, at the Alexander Technological Educational Institute of Thessaloniki, Greece. She was also lecturer at the Democritus University of Thrace, Greece. Her main research interests are focused on: (a) the enhancement of the professional development of early childhood caregivers and educators, (b) the evaluation of the quality of early childhood education, and (c) the implementation of intervention programs for preschool aged children. Her research has been published in major international peer-reviewed multidisciplinary scientific journals.

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Anna Zoakou works as researcher in the Research and Development of Ellinogermaniki Agogi school. Anna is a social scientist with theoretical background and practical experience in the management of programs related to the creative exploitation of digital media in education, capacity building in disadvantaged social groups, teacher training, anti-bullying policies, career education, and dropout studies. She holds a BA in Greek Philology and Linguistics, an MA in Political Science and Sociology and a PhD in Sociology of Education from University of Athens. Her PhD and relevant research has a particular focus on the educational aspects of the migration policies and their impact on integration effectiveness. She has a strong experience in coordinating large, inhomogeneous, multicultural teams across institutions and countries and in the organization of workshops and conferences.

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Tony Bates (Tony Bates Associates, USA)

Jay Cross (Internet Time Alliance, USA)

Christian-Friedrich Lettmayr (CEDEFOP Director, Greece)

Ignasi Labastida (Director OCW Consortium and Creative Commons, Spain)

Rory McGreal (UNESCO OER Chair, University of Athabasca, Canada)

Fred Mulder (UNESCO OER Chair, Open University of the Netherlands)

Miguel-Angel Sicilia (University of Alcalá, Spain)

Invited Speakers at LINQ 2013:

Godelieve von den Brande (DG EAC, European Commission)

Brian Holmes (Director EACEA, European Commission)

Liina-Maria Munari (DG Connect, European Commission, tbc)

António Moreira Texeira (Open University Lisbon, Portugal)

Mario Scalet (UNESCO)

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Learning Innovations and Learning Quality:
The two main objectives to foster improvements in learning, education and training and the two core ingredients for learning success and impact. They are focused by many different theories and diverse practices. And they are more and more required due the increasing speed of globalization and changes in communities, economies, technologies and societies worldwide.

This book demonstrates the need for combining learning innovations and learning quality from various perspectives: The scientific articles address the different ways of formal, non-formal and informal learning and all the educational sectors from kindergarten, school, university to lifelong learning.

Particular emphasis is put on the current opportunities provided by digital resources:
How can we benefit from their potential and increase their (open) access and re-usage in learning, education and training?

Thus, the book contributes to the current debate on opening up education towards new and innovative learning practices and online communities:
To integrate learning innovations and learning quality into a holistic and sustainable vision and approach for modernizing learning, education and training in our society.