

01 Volume 01
issue 01
June 2013

The International Journal

for Innovation and Quality in Learning

<http://innoqual.efquel.org/>

INNOQUAL

INNOQUAL is issued and published by the European
Foundation for Quality in E-Learning (EFQUEL)

ISSN (Online): 2294-9763
Editor in Chief: Ulf-Daniel Ehlers

Learning for Open Innovation

Editorial Volume 1 Issue 1



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Openness is arriving at educational institutions. It will hit educational institutions at large and change completely the nature of their organization, profile and mission. Like an avalanche it has started already on the top of the mountain and finds its way downward. You don't see it but it is moving faster and faster with great force underneath the surface. If you are experienced with avalanches you know that it will hit but you don't know when, and if you are experienced with 'old style education and training' you know why: Organisations are giving away knowledge for free. More and more higher education institutions are opening up, in their business models in their leaning designs and in their access regulations.

Training institutions and schools are beginning to change. A huge pressure on the classical 20th century education and training organisation is building up because its unique selling point – to be the sole shepherds of knowledge – no longer holds differentiating power when knowledge is made available for everybody or free. When knowledge is available one of the important future tasks of educators will be to give orientation about quality and to organize certification and assessment. The intention of this journal is to lead the way to these horizons and discuss new emerging and more open forms and methods of quality development and assessment.

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Looking at our educational institutions we can see that much of the reality of education and assessment is (still) tied to formal learning scenarios. However, sometimes we can see that educational professionals more and more are bound to recognize also informal learning processes and networks of their students, moving ahead to new and more open learning cultures.

Together with the change in learning and training organisations, also the quality regimes, assessment cultures and value creation will change drastically. When we begin to understand how education needs to change, to establish a quality consensus is often still far away.

When it comes to quality development and/or assessment it is not evident and often not easy to create quality and/or assessment concepts for open learning cultures which allow recognition of informal learning influences into institutionalized learning worlds. The open learning cultures are drastically opening the learning process to influences beyond the classroom and the institutional context and merge private, informal learning, the benefits of open knowledge and publicly available content with traditional formal and often institution bound learning processes. Open learning cultures demand for open quality cultures; demand for quality cultures rather than for quality control. They are challenging the old and long practiced pathways of our practice as educators, are often characterized through elements of open learning architectures and transform learning into a more student driven and self-responsible learning, using technology to connect resources, students and teachers in a new way.

We can also think of the new learning styles also using the metaphor of learning ecologies due to the fact they have an evolving and emerging nature which is composed of many interdependent parts, beyond traditional classrooms borders stretching into the family, private life and activities or professional contexts, and all together building the ecology in which learning is embedded. In these open learning ecologies, assessment has the function of moving closer to the actual

learning experience itself and is a tool for learners to determine their own progress, learning needs and next steps. Evaluation criteria are negotiated with peers and facilitators or learning coaches and assessment and evaluation become integral parts of learning themselves. But how to deal with these so dynamic and individual processes of evaluation and assessment?

After a phase of divergence and polarization we can see now that a new form of blended learning is evolving. Blended learning here means not only that technology is enhancing the learning environment but also that blended forms of quality development, of blending formal and informal learning, and of self- as well as peer-assessment are evolving more and more. Open learning is displaying a new *mélange* of contexts and elements.

How does all this changes the nature of quality development, quality management, assessment and evaluation in our educational institutions? Where is such a changing learning world is the place of quality development? And how does it have to look like?

It becomes apparent that in all education sectors we are entering a new era in quality management. While it is difficult to mark its exact beginning, it is clear that it is a move away from a mechanistic to a holistic and cultural view of quality in education. It is characterised by an emerging understanding that quality development in essence demands for the development of an organisational culture based on shared values, necessary competencies and new professionalism. Whereas much attention has been paid to mastering instruments of quality control or accreditation in the past decade, the focus is more and more on mastering change, allowing ownership for individual development, promoting champions in organisations and enabling professionals in higher education contexts.

Concepts like quality control, assurance and management are often perceived as technocratic top-down approaches which frequently fail in educational institutions. For a long time quality development has followed

a modularistic approach by singling out organisational processes, describing and quality assuring them. The new generation – or era – focuses on *change* more than on *control*, *development* rather than *assurance* and *innovation* more than *compliance*. The former – traditional – understanding of organisational management, promoted by theorists like Michael Porter (1985, pp. 11-15), inherently represents the belief that strategies can be pre-determined and precisely planned. The latter, promoted most prominently by Henry Mintzberg (1994, p. 112), affirms that change in organisations is *emergent* and resulting from employees' competences and organisational culture. In this understanding aspects like quality management systems and instruments, competencies and individual and organisational values are not seen as separate entities any longer but are combined in holistic concepts. None of them is superior to the other. In this new view educational quality can not be normatively pre-defined by experts but has to emerge in open negotiation and through stakeholder participation. From such an organisational cultural perspective it is important to approach quality holistically and combine cultural elements, structural dimensions and competencies into one holistic framework, enabling stakeholders to develop visions, shared values and beliefs.

A main problem which has to be addressed in future works is that even though sometimes effective organisational processes have been implemented, the *educational* quality (e.g. answering the question "what is good learning?") is still lagging behind, and teaching strategies of educators or learning strategies of students have not been improved. The development of such an *education oriented* and comprehensive concept for educational quality in organisations is still underdeveloped (Newton, 2000, pp.153). In earlier works elements of a new and more comprehensive understanding of quality for education have been worked out. It has been suggested that quality development in education has to focus on incorporating new values, skills and attitudes into professional educators' behaviour in order to have an impact on the teaching and learning process (Ehlers, 2006a,

2007, 2007a). We proposed that educational quality is the result of a co-production process in an actual learning situation (Ehlers, 2006, 2005, 2004), and observed that in contrast to that many quality strategies follow the implicit logic that the quality of educational processes is a direct result of a 'faultless flow' of planning, preparation, and teaching processes. Although unveiling this position as 'mechanistical myth' in the quality development debate it prevails in research contributions and designs. We were then emphasizing the importance of competences rather than mere process definitions in order to enable educators and students to act as competent quality developers of their own improved educational environments. The so-called *quality competences* have been described in the concept of quality literacy (Ehlers, 2006a, 2007, 2007a, 2007b).

Jean Monnet, an important figure in the European unification process, once said "If I would again start with the unification of Europe, I would start with the culture and not with the economy." (Haas and Hanselmann, 2005: 463 and 464) A similar observation can be made when looking at the introduction of quality management strategies in higher education. Too often instruments and tools are introduced without respecting given cultural situations. While the quality of teaching and learning interaction between students and educators in higher education is influenced by a variety of factors, including attitudes and skills of teachers, abilities and motivation of learners, organisational backgrounds, contexts and values and the existing structures, such as rules, regulations, legislation and alike, the majority of approaches to assess, assure, manage or develop quality is only partially taking them into account. They are directed towards improvement or regulation of organisational processes (in the case of process oriented quality management approaches), the assessment of the outcomes of activities (in case of assurance or evaluations approaches) or to development of individual abilities (in case of quality development through professional training approaches).

Two opposing developments in education and training quality regimes can be observed. On

the one hand structures, accreditation, rules and regulations gain importance, mainly with the rise of New Public Management approaches (Hood 1998: 212). On the other hand the interest in culture as underlying concept for organisational improvement in higher education performance is a dominant theme in much of the available management literature (Löffler, 2005). In essence, the important emerging message is that an emphasis on values, norms and culture in an organisation is easily combined with question of organisational accountability and performance (Martin et al. 2000; Stratton 2006). While the awareness for the networked and "total systems" character of quality as a holistic concept in educational organisations is starting to spread (Wirth, 2006; Harvey 2006), the basis for empirical research and conceptual development is missing to date. With INNOQUAL we follow the aim to provide a growing pool of research and knowledge to build on and eventually provide grounds for evidence based decision making in applying concepts for quality management in a new and culture oriented way.

Quality culture is embedded into the organisational context and the organisational cultures. What can be seen from theories of culture and culture analysis, there is broad agreement that culture is *not* something which an organisation has or has not but rather that it is an element of every organisation – be it consciously perceived or not. Organisational culture can be supported and further developed but does not have to be developed or established from scratch (like marketing slogans of consulting companies suggest sometimes). The distinction between different types or kinds of organisational cultures should, however, not be seen too fundamental: Describing a quality culture of an organisation is strongly connected to analysing also other "types" of culture, like management culture, communication culture, the organisational culture as a whole. A good way of finding an analytic approach to different types of cultures is suggested in the definition of Schein (1992) who states that an organisations culture is the answer to the challenge an organisation has in a certain field. The way things are done in an

organisation related to a certain challenge or problem.

The International Journal for Innovation and Quality in Learning INNOQUAL Journal derives its mission from these gaps. It is founded as a voice for those ideas, concepts and experiences which go beyond a traditional understanding of quality into the new and more culture oriented field. Quality management and innovation in education and training is a wide and diverse field and often still lacks a systematic foundation and basis. INNOQUAL seeks to establish this basis and scientific foundation by pulling together the best thinking of scientists and research from all over the globe.

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Trusted Educational Networks for the Internationalization of Open Educational Resources

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ABSTRACT

Global educational programs have become increasingly important in Higher Education and the training sector. One promising means of global collaboration is the use of Open Educational Resources (OERs). However, this opportunity has been slow to catch on, even though millions of learning objects are freely available around the world. This paper discusses key barriers to the use of OERs, and gives recommendations for better use of materials in international collaborations. A special focus is on the development of Trusted Educational Networks, and their use within recommendation mechanisms to enhance sharing in communities of trusted colleagues.

KEYWORDS *Open educational resources, Quality, Trust, Re-use, Trusted educational network, Recommender systems*

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INTRODUCTION

In this paper, we propose the concept of Trusted Educational Networks to enhance the uptake of Open Educational Resources (OERs) by sharing them with selected user groups.

Global development in the education and training market has become increasingly competitive (Marginson, 2006; OECD 2004). One promising means of collaborating is to use open educational resources (OERs). OERs contain freely accessible materials for the purpose of learning, education and training. These can include literature and scientific resources (Open Access for Education), technologies and systems (Open Source for Education) and Open Content (actual learning materials) as well as related artifacts (such as teachers' materials or lesson plans). However, these opportunities have not been widely exploited, even though millions of learning objects are freely available. In contrast to the Open Source / Free Software movement (Baldi et al., 2002), OERs remain under-used (Ochoa & Duval, 2009). Reasons include skepticism towards free materials, the not-invented-here syndrome, insecurities regarding quality and legal aspects, but also a lack of proven business models (cf. Clements & Pawlowski, 2012).

The main aspects in making the re-use of OERs a dynamic and successful process seem to be trust and willingness to collaborate (cf. Clements & Pawlowski, 2012). We propose that initiating international, trusted groups should lead to dynamic processes and also to sustainable models for OERs. However, the international setting of global work around OERs sets new challenges. In this paper, we analyze:

- How international re-use might be improved using Trusted Educational Networks, and which services are necessary to implement Trusted Educational Networks?
- How these collaborations might be planned, moderated and supported?

We apply a Design Science Research approach (Hevner et al., 2004) to problems derived from literature research. We use a case study approach to illustrate the concept (Yin, 2003).

We start by introducing the key concepts motivating our approach. We elaborate on the concept of Trusted Educational Networks and present two case studies illustrating the approach by an initial proof of concept.

OPEN EDUCATIONAL RESOURCES – ADAPTION AND INTERNATIONALIZATION

Open Educational Resources (OERs) and OER communities are a promising basis for collaborative teaching scenarios, in schools and Higher Education as well as in adult education (Vuorikaari et al. 2004). On a global level, many institutions have formed communities to share and distribute content (Ochoa & Duval, 2009). Major initiatives include OpenScout in the management domain (Kalz et al., 2010), OpenLearn (McAndrew, 2006), Ariadne (Ternier et al., 2009) and MERLOT (Cafolla, 2006). The most important federation of repositories is the GLOBE initiative (Ochoa & Duval, 2009).

OERs are intended to be re-usable, accessible, and interoperable, although the ease of this process often depends on the type of materials. In this paper, our examples tackle OERs which can be re-used with moderate ICT skills, such as text, pictures or slideshows.

OERs enable a community-based, cooperative production process which, in an ideal scenario, leads to an exponential increase in content (Pawlowski & Zimmermann, 2007). Examples of such success stories can be found in the field of open source software (Baldi et. al, 2002) or open access publishing (Björk, 2004). However, none of the aforementioned OER initiatives has currently gained a wide acceptance. Several barriers have heretofore prevented a broad range of stakeholders from using and providing OERs (cf. OECD, 2007), such as an insufficient

quantity of available content, a lack of communities of developers and users, or a lack of adoption and sharing. However, to overcome these barriers of knowledge sharing, it is not yet clear how to facilitate international, multi-lingual, multi-cultural groups of developers, teachers and learners.

In our previous research, (Clements and Pawlowski, 2012) we identified knowledge sharing and trust to be the main barriers for re-use of OERs. The same study (n=146) showed that 82% of teachers found resources based on recommendations from colleagues, 71% found resources based on recommendations from personal friends, 56% searched for resources highly ranked by their peers, and 58% of teachers searched for resources that come from an organization with good reputation such as Harvard, MIT or NASA. This suggests that most users listen to recommendations, in particular from people they trust. Teachers in this study were from various countries around Europe. This study is in accordance to other prior studies in the field of OERs (Atkins et al, 2007), knowledge sharing (cf. Fukuyama, 1995) and organizational learning (Brown & Grey, 2008). Therefore, it can be argued that *trust* is one of the key factors for improving re-use, adaptation and internationalization.

TRUST

Trust is a key concept in communities, and has been analyzed from different perspectives and disciplines, such as in establishing relationships to organizations or persons (Cummings & Bromiley, 1996, Morgan & Hunt, 1994). A key aspect of our analysis is interpersonal trust in virtual (global) teams (Järvenpää et al., 2004, Paul & McDaniel, 2004). For our context, trust significantly influences the tasks of collaboration and sharing, in particular (short-term) swift trust (Meyerson et al., 1996, Järvenpää, 1998, Coppola, 2004). In relation to (work) tasks, however, Järvenpää et al. (2004) could not prove that trust had a moderating effect on outcomes such as task quality or attitude. We assume that this will be different in

educational settings. This is specifically the case because the task of creating and sharing educational OERs is different from work settings. Whereas in global teams the goal and mode of collaboration is usually clear (Cummings & Bromiley, 1996), tasks within social networks can occur spontaneously (e.g. “creating a new slide set for a given topic”), and thus the task-building is already influenced by trust itself.

However, trust is dependent not only on the behavior of a person, but also on factors such as the context, or the trustor’s perception (McKnight, Cummings, Chervany, 1998). Therefore, it is necessary to understand the role of trust and its connection with the tasks in our context – re-use, collaboration – and their quality. The concept of trust can also be seen as a decision instrument to reduce complexity (Paul & McDaniel, 2004). In this sense, different entities can also be valued as “trusted”, such as organizations (Dirks & Ferrin, 2001), resources (Jøsang et al., 2007), or even countries. For our domain – OERs – trust is important for different entities. The aspect of personal trust in social (educational) networks has been further analyzed in different settings (Klamma et al., 2007, Golbeck et al., 2003). Trust-based mechanisms (Jøsang et al., 2007), such as recommendations, seem appropriate for initiating a trust-building process.

More specifically, Vuorikari et al (2007) studied social recommendations based on relationships or trust in personal networks (i.e., how can recommendation mechanisms for OERs be improved through social information?). Typical mechanisms are based on trusted relationships and their distance (this would include trivial relationships like “friends”, “friends of friends”, etc.). We assume that trust even exists to the second or third degree (“friends of friends”, “friends of friends of friends”). However, there has yet to be a study of how the re-use of OERs and the establishment of new personal (trusted) relations are influenced within social educational networks.

In our previous work (Clements & Pawlowski, 2012), we identified key aspects for trust in OER sharing to be 1) organizational reputation, 2) personal relations, and 3) frequent use of resources. Therefore, it can be assumed that collaboration across multi-national teams is increased within trusted partnerships. We also believe that trusted networks support the exchange, re-use and adaptation of OERs.

TRUSTED EDUCATIONAL NETWORKS

Below, we describe the key concept of Trusted Educational Networks. The concept is developed as a Design Science Research (Hevner et al., 2004) artifact. The main need from practice is the low uptake of OERs and our analysis of interactions of users in OER networks and Learning Object Repositories.

A **Trusted Educational Network (TEN)** describes a collaboration of distributed educators where decisions (such as the selection and recommendation of OERs) are eased through mutual trust in a shared context (e.g. primary school, university) and topic area (e.g. science teaching, information systems design). Typical decisions in such a network are recommendations regarding OERs, decisions to collaborate in projects or mutual research support. A TEN is based on personal relationships, instead of time-consuming processes and based on a simple idea: people trust friends and colleagues, and communicate with them intensively in social / professional networks. However, communication of actors is not utilized systematically following TEN relationships. In professional networks, actors are organized by simple classifications, e.g., based on business transactions, educational background, or personal interests. In social networks, different classifications of relations are used, such as distinctions of family relationships, educational or professional networks (e.g. school, university, organizations, employers), primary contents, group size etc. (cf. Jahnke, 2010). Such relationships might not

always help in identifying trustworthy people when making decisions. In the context of OERs, trust may constitute a crucial success factor, as an OER may sometimes only be discovered via trusted relationships (e.g. sharing personal slide-sets), but not in public repositories. Also, when finding good (open) courses or learning resources to acquire new competences in career development, the same problem occurs: many learners cannot judge the quality of programs, courses or materials that might aid in career development or competence advancement. Recommendations – which are, in many cases, utilized in face-to-face decision processes – are not supported by educational markets. We propose that recommendations by trusted networks would ease and improve the decision process for finding OERs and collaborators.

Trusted networks are built by relationships based on:

- **Topic / subject of the collaboration:** We do not trust *people* in general, we trust a certain area of expertise.
- **Context:** We do not trust people for all purposes and situations – we trust them in certain contexts (e.g. for course recommendations at school, for recommendations in a certain project context)
- **Proximity:** We do not generally trust people when we do not know them personally. We trust people we know and have worked with. We also trust their recommendation on other people. The concept of proximity (equivalent to social distance) plays a major role how we trust in complex networks. Proximity depends on topic and context. The following figure shows the types of relations showing the relative distances of people and how to identify colleagues we trust.

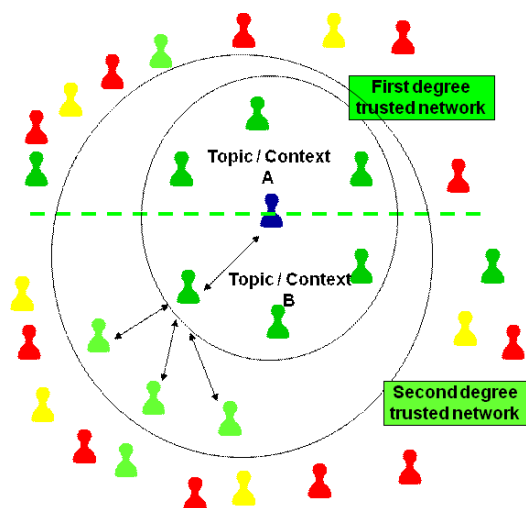


Figure 1 Trusted Educational Network

The idea is to substitute time-consuming assessment, quality assurance and search processes for OERs with trust-based recommendation mechanisms. The recommendation process for OERs (cf. Manouselis et al., 2009) would therefore substitute previous search and validation processes. To implement such a process (e.g., for the user community of a repository or for a social network group), technical base services would need to be developed. On the implementation level, the following services would be necessary to enable trust-based recommendations, for example in repositories and social networks:

1. **Describe trust relationships / find trustees:**

It is necessary to describe which people are trusted, and to identify who could act as trustees (experts, colleagues, recommended colleagues). On the implementation level, this requires a service which lets users specify trust relationships (e.g., which topic, how strong the trust is) and also recommend potential trusted colleagues.

2. **Get trusted assessment:** In the searching process for OERs, we aim at short-cutting the validation process by receiving simple recommendations from trustees (e.g. do they know about good resources from themselves or from colleagues). Therefore, the trusted partner recommends an OER and judges its quality.

3. **Update trust profile:** Whenever good and helpful recommendations are made, trust will increase. This process can also contain incentives (e.g. a reward for a successful recommendations, improved user status).
4. **Recommend trustees / recommend resources:** This activity relates to the actual process by which an actor provides a recommendation for a resource or for a trustee. On the implementation level, this requires recommendation services based on trust level which extend the number of trustees who could make recommendations. The same is the case for OER recommendations based on trust and context information.
5. **Further trust services:** These services allow the aforementioned complex services, such as description of trust level / context, Trust level per context (e.g. organization / sector / educational level) and topic / subject / culture (language, habits, etc.), Trust creation, Trusted competence description/taxonomy (EQF), Trusted competence-people-/object-assignment, Trusted quality services (recommending materials / courses), Trusted people services (recommending people / partners / collaborators), Trusted recognition: recognize competences by trust (instead of long assessments).

The above services need to be implemented in repositories and social networks. However, the process becomes more powerful relative to the increasing the number of trustees (e.g. by recommending people who have a trusted relationship to a trusted colleague, similar to “friends-of-friends-recommendations”).

CASE STUDY: IMPROVING INTERNATIONAL PARTNERSHIPS USING TRUSTED EDUCATIONAL NETWORKS

Below, we show two cases to 1) illustrate the concept and 2) present an initial proof of concept. We investigate how the process of

using OERs for course building improves when using Trusted Educational Networks using a multiple case study (Yin, 2003). This method was chosen for two reasons. First of all, TENs are a new, emerging concept which need initial exploration regarding impact and usefulness. Secondly, the concept strongly depends on the context (e.g. type of educational sector, institution, culture). The case study is thus useful as an initial validation and to build initial theoretical abstractions (Eisenhardt, 1989).

To support our case study, we performed a small sample (n=51) survey (Yu, 2003) on users' trust in recommendations, coming from inside their TEN or other networks regarding OER use. These teachers participated in the case study described in further detail below. 51% of the respondents were women. 19% of the respondents were in the first 10 years of their teaching careers. 40% were in the middle of their teaching careers and 41% were close to retirement age. The surveys were gathered in paper format after the participants had completed a workshop of OER searching and adoption. The concept of TEN was not specifically discussed or introduced in the workshop.

The case study has been elaborated in the project OpenScout which focuses on adaptation services (Kalz et al., 2010). OpenScout has developed a Learning Object Repository containing OERs for the domains of business, management and related areas. The repository has been validated in different scenarios. One focus scenario has investigated how OERs are exchanged across language and cultural borders. An initial validation on the usage of OERs has shown a variety of barriers (Pirkkalainen & Pawlowski, 2013). As the next step – in the current case study – different interventions have been tried to increase the uptake of OERs. TENs have thus been used as a key intervention.

The case study deals with collaborative OER uptake in Higher Education, in particular between Europe and Asia, where there are clear differences in terms of culture, pedagogies or

technology uptake and acceptance. In this scenario, the following situation is given: A university teacher in Finland needs to develop a new course, for example, in the field of “Mobile Business Technologies”. The course has to be developed from scratch. Thus, the effort required is rather high. In a traditional re-use process, the author would search some of the promising repositories (e.g. GLOBE, Slideshare) and validate solutions as well as excluding hundreds of irrelevant or low-quality solutions. In a TEN (e.g. consisting of well-known Finnish and Korean professors in the domain), the author receives recommendations from colleagues who 1) have knowledge of the domain, i.e., mobile technologies, and 2) have mutual trust, i.e., second degree TEN. In this setting, the author requires much less effort to validate and adapt solutions as trustees mutually support each other. Also, the content can be enriched and enhanced in the development process. This means that the same (original and re-authored) materials will be further developed by the collaborators, leading to new ideas and a generally higher quality. As a result of this process, the author receives more reliable and high-quality materials, which are given back to the community, i.e., the TEN. Through this, all parties benefit from their involvement as the materials develop dynamically. The following table sketches the process and summarizes the main effects:

Table 1: Traditional Re-Use vs. TEN process

General Process	Traditional Process	TEN process	Case Study	Comparison
Search existing materials	<ul style="list-style-type: none"> Search large repositories (e.g. GLOBE) Get a large amount of possible OER 	<ul style="list-style-type: none"> Ask trusted network for recommendations Receive a small number of possible OER 	<ul style="list-style-type: none"> A search for "mobile technology" returns 243 results in GLOBE, >90000 results in Slideshare A recommendation of a small trusted networks led to 10-20 alternatives 	<ul style="list-style-type: none"> TEN process provides good recommendations, maybe not all possible solutions
Validate re-usability	<ul style="list-style-type: none"> Validate dozens of solutions Exclude irrelevant solutions 	<ul style="list-style-type: none"> Validate small number of recommended solutions OR Rely on colleagues judgments and only screen through recommendations 	<ul style="list-style-type: none"> A serious validation of 243 resources is almost impossible, thus, more effort on filtering is necessary. Then, the resources need to be reviewed By recommendations, knowledgeable experts provide a substitute for the validation 	<ul style="list-style-type: none"> Validation is highly efficient if trustees make high quality judgments
Adapt solutions	<ul style="list-style-type: none"> Realize adaption (translation, graphical / user interface, cultural specifics, didactics) 	<ul style="list-style-type: none"> Realize adaptation Get support from trustees (e.g. regarding cultural aspects) 	<ul style="list-style-type: none"> The adaptation process (e.g. English speaking materials from Korea to the Finnish context) is similar for both. In our setting, the content needs to be translated Some contents need to be changed (e.g. on usage behavior of mobile technologies, networks & suppliers) Some didactical aspects need to be adapted (inclusion of independent group works) Support is given through discussions with the initial author in the TEN scenario 	<ul style="list-style-type: none"> Support of trustees can improve the adaptation
Validate solution	<ul style="list-style-type: none"> Validate solution 	<ul style="list-style-type: none"> Validate solution with support of trustees 	<ul style="list-style-type: none"> Both cases require a validation of the final solution. In the TEN case, the author can support this as an expert validator. 	<ul style="list-style-type: none"> Receive validation support from trustees, improved quality
Share solution	<ul style="list-style-type: none"> Share / re-publish solution 	<ul style="list-style-type: none"> Share / re-publish solution Support initial author by a new version 	<ul style="list-style-type: none"> The resulting learning materials are re-published. In the TEN scenario, the original author might also re-use the improved materials In the TEN scenario, also trust is increased through the common collaboration. 	<ul style="list-style-type: none"> Mutual benefits by adapted improved solution Higher trust between adaptor and author

Table 1 TEN processes and effects

In the case study, we observed a very low uptake of more than 90% of the available resources. However, those OERs which were recommended were highly re-used. As an example, an open course on “global knowledge management” has been used in different ways of modification / adaptation such as 1) Translation of selected parts into Korean, 2) Adaptation for different purposes in Finland, 3) Adaptation to industry courses in Iran. All of these scenarios were initiated through recommendations, mainly 1st and 2nd degree members of the TEN. This initial application of the TEN concept cannot yet be generalized, as many further factors determine the uptake. However, this explorative study shows that the concept is promising and seems to support OER usage.

During our case study, we also questioned users’ trust in various levels of people in their Trusted Educational Networks. The concept of trust can differ depending on the person, so to raise relevance of this study, definition of trust

in this context for the respondents was taken to mean that the respondent would be willing to use OERs generated by the person in question in their own work/teaching.

The results (see Figure 2) clearly support trust in both 1st and 2nd level TEN connections, whereas recommendations from outside users’ TENs were considered roughly as trustworthy as automatic recommendation systems offered by online shops such as Amazon.com or eBay. Nevertheless, 47% is a high amount, which gives an interesting indication of trust existing even without TEN connections. Although our sample was small, the survey supported the findings of our explorative study.

Hence, we have shown that time-consuming validation processes are eased by mutual support and expert recommendations. The following effects were observed in the case study and should be further validated:

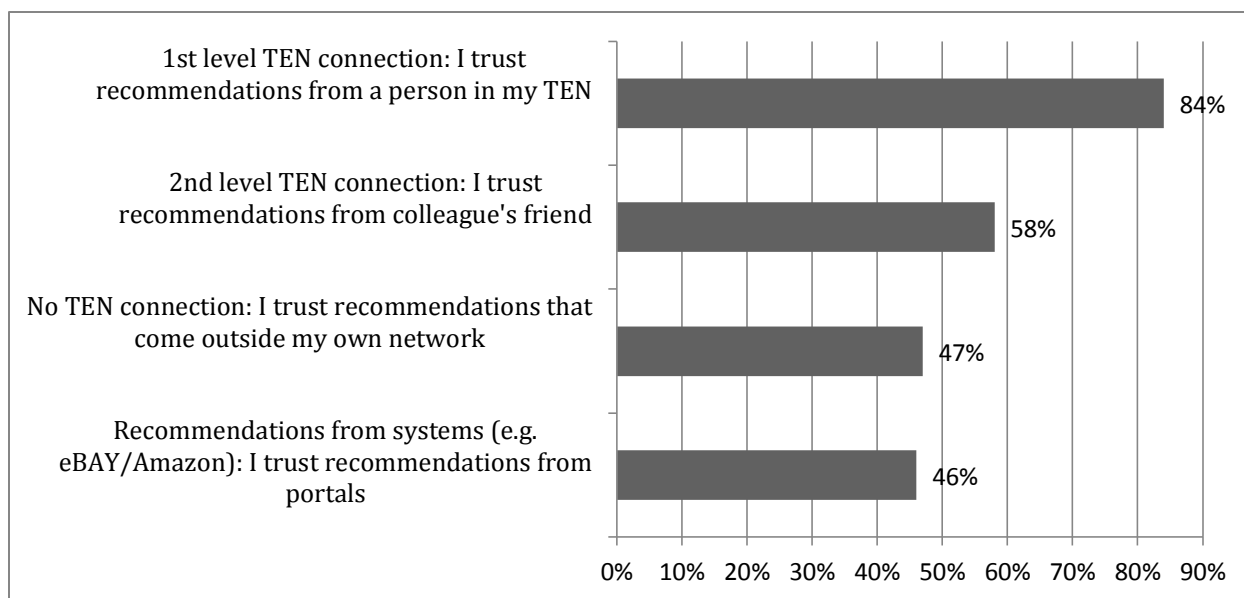


Figure 2 Users’ trust in various TEN levels when using OER (n=51)

- Easing current complex processes: The TEN approach will ease search and adaption, as well as quality assurance, by the means of trust-based services
- Creating new services and added-values for educational networks: We have provided a conceptual base for creating services which are based on our concept of trust. This can lead to new commercial opportunities and competitive advantages (portal providers, educational communities, tool providers, training providers and market places)
- Improving the quality and reliability of services (e.g. recommending training offers, recommending talents) by implementing trust-based services instead of unreliable quality mechanisms
- Improving re-use and access: We have overcome the main barriers (mistrust and quality concerns) by adding trusted services and materials.
- Community building: Our dedicated focus was to find new ways of building communities and creating / describing relationships within those communities beyond overly simplistic mechanisms (such as uncategorized "friends").
- Building new services across communities for training and education: We have enabled new ways of finding collaborations across the globe based on trust. This may eventually lead to increased and improved global collaborations.

The case study has shown the feasibility of the concept. However, the effects mentioned above need to be further validated.

CONCLUSION AND FUTURE RESEARCH

In this paper, we have outlined the concept of Trusted Educational Networks (TENs) which allow easing, improving and enhancement of re-use processes for OERs. In our case study, we have outlined the effects in a typical example, i.e., building new courses. The concept has proven successful at a conceptual level and in a case study in the project OpenScout (Kalz et al, 2010). Further

research questions have emerged concerning the quantitative analysis of the effects and impact, as well as the analysis of how cross-border collaborations develop over time, based on trusted partnerships. An ideal setting for future research would be to test a TEN scenario against a traditional scenario to research the differences in these settings.

ACKNOWLEDGEMENTS

This work has been partly conducted with co-operation of European Union-funded project "OpenScout: Skill-Based Scouting of Open Management Content" (<http://www.openscout.net>), reference no. ECP-2008-EDU-428016 and "OpenDiscoverySpace: A socially-powered and multilingual open learning infrastructure to boost the adoption of eLearning resources", reference no. CIP-ICT-PSP-2011-5-297229.

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Transtitution – Transforming Higher Educational Institutions through Modernization of its Middle Management

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ABSTRACT

Modern societies are deeply characterized by professional expertise as a way to meet the challenges of the 21st century. As a response to those challenges in the corporate sector, organizational change has become a substantial part. However, the organizational changes in higher education institutions usually start too late and run too slowly, not allowing it to fit into the future on time. To meet these challenges, the development and education of specialized academic managers, especially in the middle management segment through the so-called “professionalization” of middle managers, is recommended.

A new service called “Transtitution” is developed to lift up and enable transformational processes in higher education institutions. The service is based on the “Transtitution Maturity Model (TMM)” which covers four development stages, such as instruction, application, sharing and finally inspiration related to external stakeholders. Internally, the three development stages of resources, practices and culture can be defined. However, transformation is always related to individuals. Here, the willingness, the ability and the possibility to apply change play a major role. Taking into account the systemic impact of a transformation, all three dimensions need to be considered at the same time. The direction of a transformation can be initiated both ways: Top-down and bottom-up. This is one of the reasons why middle managers could play a crucial role in the facilitation of the transformation. Methods and tools of the “Transtitution” service are described as the conceptual model of organizational change in higher education institutions. The “Transtitution” service is demonstrated on the example of transformation of higher educational institutions in Serbia towards strengthening of its managerial capacity concerning improving distance education.

KEYWORDS *Professionalization of HE institutions, Middle management, Transtitution Maturity Model (TMM)*

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INTRODUCTION

The modernization of EU higher education systems through organizational change of HE institutions is the way to meet challenges in their external environment and respond to the needs of modern society. The new agenda for modernization of Europe's higher education systems, published in September 2011, highlights the need to invest in people, to support future leaders and encourage the professionalization of higher education management at all levels.

Transforming higher educational institutions through organizational change is one of the dimensions around which professionalization within universities across European higher education systems seem to be converging so as to strengthen the managerial institutional management. The development and education of specialized academic managers, especially in the middle management segment through the so-called "professionalization" of administrative middle managers, is regarded as organizational innovation. It follows the actively entrepreneurial nature of university governance as a way for increasing demands of accountability to external and internal stakeholders.

However, instead of a transformation of educational institutions, we often face rusty hierarchical structures, crippling bureaucracy, stiff cultures and an overwhelmed middle management, which is not able to facilitate a transformation. From that reason, the importance of enhancing the training and development of managers in higher education has been identified by numerous sources [Withchurch, 2012], [Maassen, 2012], [Blumel, 2008] [Schofield, 1996], etc., as a priority if greater effectiveness is to be achieved in university management.

When we talk about higher education institutions, it is important to consider that they differ from each other in type, size, strategy and culture and that there can be no one-size-fits-all solution to problems of transforming higher educational institutions. Besides, transformation of an educational institution is huge and serious and a long

lasting activity (includes many parallel processes). Therefore, a general conceptual model of organizational change in higher education institutions was considered. Based on these assumptions, a transformational model, called "Transtitution Maturity Model (TMM)" has been developed.

"The Strategy of development of education in Serbia until 2020" [Strategy, 2012] emphasizes the "entrepreneurial university" concept, allowing such universities to be the nucleus of creating new industries based on knowledge. "Transtitution" service demonstrated in the example as a model of transformation of higher educational institutions in Serbia aims towards strengthening their managerial capacity concerning improving distance education.

PROFESSIONALIZATION OF HE INSTITUTION MIDDLE MANAGERS

Universities in many developed countries have invested heavily in academic training and development within the last decade and this contrast with a much more limited growth in management training. The demand for and provision of education and training activities in the area of higher education management and leadership in Europe have been addressed by the EU-funded project MODERN [Maassen, 2012] and also by [Blumel, 2008]. HE administrators need more management skills. Academics with leadership and management responsibilities also need to be trained regarding their professionalization. Skills and competences in management and leadership have to be developed in an evolutionary way in both groups. This is complemented by taking up new kinds of activities, such as intensified PR work, relationships with alumni, international relations, career development, e-learning, fund-raising and internal and external communication, all of which require special know-how as well as the involvement of managerial experts.

Middle managers do not belong to the executive or senior leadership of universities.

We have described them as “non-academic staff holding responsible administrative and managerial positions below the level of registrar or chief administrative officer; or as academic staff at the level of heads of departments, subject areas, or research units and who may formally report to either a faculty dean or direct to the vice-chancellor depending upon the decision making structure” [Schofield, 1996]. Another description of academic middle managers is that they “face the challenge of functioning at the interface between the university’s central administration and the faculties and departments where the rubber of the new marketized and strategic research environment meets the road of daily academic life” [Boyko, 2008].

Regarding the roles of middle managers in allocating resources and coordinating business processes, they can make sizable contributions to institutional strategy by leading efforts for operational effectiveness [Fugazzotto, 2009]. Although the focus of middle management is initially identified on solving problems operationally, they should get further vocational training with the intention of creating changes in university policy and practice.

A cultural change is needed, allowing for an effective cooperation between professional institutional leaders and managers and academic staff [Maassen, 2012]. University administrations in most European countries served mainly as discrete working bureaucracies responsible for general maintenance and implementation of decisions taken by the academic councils. There are strict boundaries between the academic core and the university administration as well as for its interaction with external partners and public agencies. In addition, there seems to have been a strong negative perception of academics that felt university administrators to be “autocratic” [Blumel, 2008]. In the middle-out approach [Cummings, 2005] the institutional culture emphasizes collaboration, partnerships, negotiation, and distribution of authority between faculty members and the middle managements.

The middle management development and training require not only proactive leadership from senior staff, but has to become an integral part of departmental and institutional life. Training and development may be organized as part of an overall institutional quality improvement strategy.

The conceptual model of organizational change in HE institutions

Cummings et al. [Cummings, 2005] favors The Content, Context and Process Model (CCP) developed by Pettigrew and Whipp (1991). The main premise of this model is that successful change is a result of the interaction among the content or the “what” of change (objectives, purpose, and goals); the process or the “how” of change (implementation); and the organizational context of change (the internal and external environment). The model proposes the following eight interlinked factors as important in determining how successful a specific change will be:

1. Key people leading change (especially a multidisciplinary team)
2. Quality and coherence of local policy (analytic and process components)
3. Cooperative interorganizational networks
4. Supportive organizational culture, including the managerial subculture
5. Moderate, predictable and long-term environmental pressure
6. Simplicity and clarity of goals and priorities
7. Positive patterns of managerial and staff relations
8. Fit between the change agenda and the locale

Blumel [2008] assumed that the establishment of specialized networks and professional associations at least in certain functional areas of higher education management can be witnessed. These networks would have to be relevant platforms for coordination and knowledge exchange for administrative middle managers. Furthermore, it is expected that there are academic programs or internal training courses that middle managers in the field know and increasingly participate in.

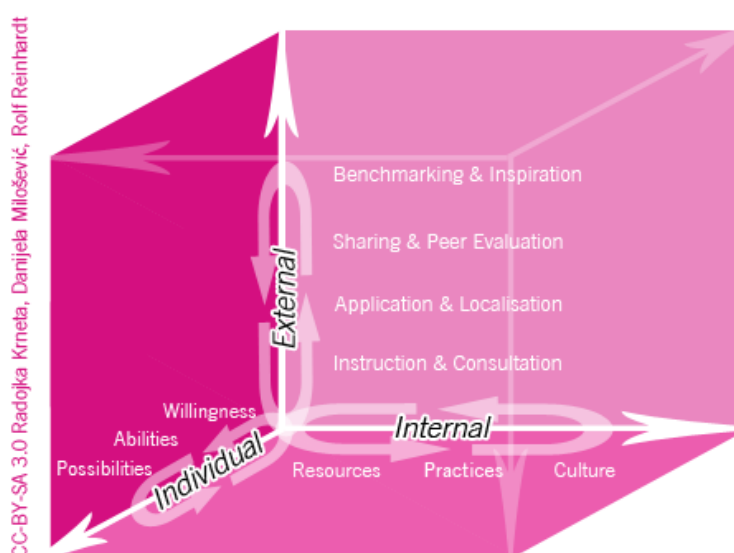
Taking into account the models of organizational change in HE institutions analyzed above, we developed “Transtitution” service based on the “Transtitution Maturity Model (TMM)” and focused on the lifecycle of a transformation (organizational change). “Transtitution” provides a concept for internal and external stakeholders networking in order to facilitate best practice and reflect next practices in development and training of HE middle management. The creation of a communication platform for exchanging experiences (the networking), as an important part of the professionalization of institutional management and leadership, is also outlined by the MODERN project [Maassen, 2012]. The transformation of an educational institution requires several perspectives, such as the individual development, internal provisions and external relations. In addition, transformation processes can be initiated both ways: top-down and bottom-up. This is one of the reasons why middle managers will play a crucial role in the facilitation of the

The Conceptual model of “Transtitution” Development Cycles for middle management in HE institutions is shown as three-dimensional model in the Figure 1.

The “Transtitution” service covers externally four development stages, such as instruction, application, sharing and finally inspiration related to external stakeholders. Internally, the three development stages of resources, practices and culture can be defined. However, transformation is always related to individuals. Here, the willingness, the ability and the possibility to apply change, play a major role. Taking into account the systemic impact of a transformation, all three dimensions need to be considered at the same time.

Examples of the alignments of Internal Provisions with External relations, the Individual Development with the External Relations and the Individual Development with the Internal Provisions are shown in Tables I, II and III, respectively.

Transtitution Development Cycles for Middle Management in Higher Education Institutions



transformation- but their development is needed.

Figure 1 Three-dimensional conceptual model of Transtitution Development

External / Internal	1. Instruction & Consultation	2. Application & Localisation	3. Sharing & Evaluation	4. Inspiration & Benchmarking
Culture	Going through Systemic Needs Analysis (status-quo)	Launching internal project (change)	Involving internal and external stakeholders for evaluation (adaptation)	Consulting other institutions, demonstrating leadership, quality development (support)
Resources	Reading external manuals, guidelines etc. (acquisition)	Adapting external guidelines for Internal use (localisation)	Creating public material on institutional change (production)	Writing articles in scientific and general journals (contribution)
Practices	Attending workshops (experimentation)	Peer learning in institutional Community of Practice (self-assessment)	Peer learning in specialized topic communities (peer evaluation)	Teaching in MOOCs, Speaking at conferences, Quality demonstration (spread)

Table 1 Transtitution Maturity Model using the dimensions "External" and "Internal"

External / Individual	1. Instruction & Consultation	2. Application & Localisation	3. Sharing & Evaluation	4. Inspiration & Benchmarking
Willingness	Find out about the individual willingness to develop, offer specific positions (Key Opinion Leader etc.).	Gather the KOLs in a cross-organizational Community of Practice to analyze the local situation and to develop methods for measurement the willingness.	Engaging further stakeholders (e.g. in cascade structures, depending on the size of the organization)	Starting monitoring (both qualitative and quantitative) on the willingness and compare the results.
Abilities	Conduct workshop for individuals from different organizations	Create quality circles or communities of practice to apply the abilities	360° evaluation and further improvement	Formal evaluation e.g. EQF, ECVET etc.
Possibilities	Provision of training catalogues and general support to develop with external partners	Application of online expert communities, regular tables, etc.	Inclusion checks, output checks etc.	Transmission of acquired individual knowledge and skills to peers

Table 2 Transtitution Maturity Model using the dimensions "External" and "Individual"

Internal Individual	1. Culture	2. Resources	3. Practices
Willingness	It is important here, that the Top Management does this type of stimulation and embeds it into the organisational culture.	Here, we would need to emphasize that the resources stimulate willingness, e.g. through usability, practicality etc.	Internal marketing events.
Abilities	This is about the ability to transform the culture in an organization. Basically change management techniques	Resources are mainly time and money - but for sure also a library of necessary resources such as job aids etc. Here, this indicator is about the ability to use the resources (help for self-help)	Here, we could bring in the training or courses, which consist of practical experiences.
Possibilities	The culture shall provide the possibilities for internal growth, i.e. talent management etc.	This refers to a bunch of possibly resources that can be used - and where the individual can choose.	Here, we could have concepts of the "Living labs", which are applied e.g. in LANETO.

Table 3 Transtitution Maturity Model using the dimensions "Internal" and "Individual"

TRANSFORMATION OF HE IN SERBIA TOWARDS STRENGTHENING OF ACADEMIC MANAGERIAL CAPACITY

One framework of reform in Governance and Management of Higher Education in Serbia was given by Tempus project GOMES [Moustakis, 2011]. As a solution for overcoming of HE institutions tendency to consume itself with internal matters rather than attending to social needs and values, a turn of the traditional management pyramid up-side-down emerges to emphasize the role of internal and external stakeholders – students and society. The reverse management pyramid emphasizes that governance and management should tune into society goals and aspirations and that administration and, broadly speaking, middle management should view itself as a Facilitator of these goals and aspirations or as an efficient Interface between Department Heads and Faculty Heads (Deans), Faculty Heads and Senate, Rector and Vice Rectors.

The Strategy of development of education in Serbia until 2020. [Strategy, 2012] emphasizes an "entrepreneurial university" concept, allowing such universities being nucleus of creating new industries based on knowledge. "Transtitution" service, described in previous sections, could be successfully applied as a tool for planning activities by systematic needs analysis of organizational change at HE institutions in Serbia, as well as the implementation of those activities by launching internal projects, evaluation of the implementation by involving internal and external stakeholders and making changes – improvement of HE institution effectiveness based on the evaluation before starting the development cycles over. This developing cycles leads to the professionalization (improved management skill set) of higher education middle management. Reinforcing the skills and capacities of the middle management will enable, for example, strengthening (or establishing) international relations offices, management and library information systems, financial management, public relations, marketing and similar new academic and administrative services leading to international, modern and professionalized HE system in Serbia.

One of the key services of Transtitution Maturity Model (TMM) is the possibility to

participate in various Communities of Practice. Together with the [BADEN Network](#) and the [Learning Agency Network](#), Transtitution supports e.g. the DL@WebTempus project in sustaining and implementing the project outcomes. We applied our Transtitution Maturity Model (TMM) on this project as one example of transformation of higher educational institutions in Serbia towards strengthening

of its managerial capacity concerning improving distance education. We have used all three dimensions of model: "External" and "Internal", "External" and "Individual" and "Internal" and "Individual". Example of the alignment of Internal Provisions with External relations through DL@Web project activities are shown in Table IV.

External / Internal	1. Instruction & Consultation	2. Application & Localisation	3. Sharing & Evaluation	4. Inspiration & Benchmarking
Culture	Analysis of existing WB practice in DL and cross-matching with EU practices and standards	Develop policy and plan roadmap for implementing and managing QA in DL Improvement and development of regulations for DL in HE institutional level in WB countries	Presenting improved DL regulations in HE WB countries at institutional level by involving internal (university leadership and middle management) and external stakeholders (National councils for HE, Ministry of Education) for evaluation (adaptation)	Establishing of the framework for improving DL quality assurance and eLearning methodology on HE institutional level in WB countries Continuous monitoring by consulting with other DLWEB partners from WB and EU, benchmarking, experience sharing
Resources	Review and analyze existing EU DL practices and principles for QA and accreditation of DL study programs in HE	Improvement and development of guidelines and procedures for DL study programs in the WB region Define eLearning methodology and QA issues for content, delivery and support processes Development of the Handbook for QA in distance learning Improvement of univ. regulatory documents and procedures	Creating public material on institutional change (production)	The Start up annual regional conference "E-learning and knowledge society" Start up online journal "eLearning and Quality of instruction"
Practices	Stakeholders seminars (feedback, advice, and validation)	Retraining-training of HE education authorities involved in DL from each partner country	Peer learning in specialized topic communities of HE middle management from WB (peer evaluation)	The start-up Balkan academic distance education network – BADEN

Table 4 Transtitution Maturity Model using the dimensions "External" and "Internal"

CONCLUSION

In modern higher education society the need to improve its middle management capacities to meet strong demands of accountability to external and internal stakeholders has emerged. Such organizational change requires a systematic approach, and thus we have developed the new Transtitution Maturity Model (TMM) with three dimensions and 10 development stages in total.

The TMM has foreseen the active involvement of external stakeholders in the dimension "External", consisting of four stages in which the communication with consultants or other transforming or transformed institutions plays a critical role. Furthermore, the dimension "Individual" addresses the institutional staff, covering "willingness", "abilities" and "possibilities" of internal stakeholders.

The TMM highlights the possibility to initiate change both top down, where the faculty or the top management follows a defined strategy and bottom-up, where an open culture allows teaching staff to get inspired by international benchmarks and to develop own practices which can then be spread and anchored within the institution.

By recognizing the importance of Middle Managers to facilitate the change, the "Transtitution" service could be further piloted and conceptually applied to HE institutions in Serbia with aim of reaching the "entrepreneurial university" concept as emphasized by "The Strategy of development of education in Serbia until 2020".

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Quality Assurance Processes in E-Learning

An Estonian Case

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ABSTRACT

Open innovation has received ample attention in the business management and policy literature, but not so much in the educational context. E-learning has been one of the main fields of innovation in the teaching and learning side of higher education for many years already. The quality assurance process in e-learning can be used as an innovation in education. In 1999, Estonian universities had only 14 e-learning courses, but with thirteen years this number has increased to more than 7000. The process of awarding the e-course quality label was initiated in 2008. To run the awarding process, e-Learning Development Centre has formed a quality assurance task force, consisting of experts from many different higher education organisations. The task force developed a manual with quality criteria, set up a 3-tier process, beginning with self-evaluation, followed by organisation evaluation containing also learners' feedback and 3-member team expert evaluation. Applicants and experts are encouraged to fill a feedback form about the application and evaluation process which helps to improve the process from year to year. In 2011 the e-learning quality web which supports all 3 tiers of the process was created. The quality web is also a good tool for collecting statistics.

Approximately 35 e-courses have participated in the application process each year. While only 38% qualified for the quality label during year 2008, the rate of successful applicants for the most recent year was 63%. The feedback from applicants suggests that this rise can be attributed to clearer understanding of quality criteria and better preparation of evaluators and streamlining of the process itself.

In this paper we will look into the innovation of teaching and learning of the Estonian universities and vocational education institutions giving an overview how the system for quality assurance in e-learning was collaboratively prepared for an open innovation at national level.

KEYWORDS *Quality label, E-learning*

INTRODUCTION

„Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology”. [1] Open innovation has received ample attention in the business management and policy literature, but not so much in the educational context. There are many models how open innovation is working for companies. But what about open innovation within the universities (and other higher education organisations) themselves? As an organisation, they too need successful innovation schemes to survive in a contemporary world. Universities, having two main processes: research and education, have to innovate both.

Innovation in universities has attracted researchers' attention mainly in the framework of scientific research and collaboration with companies - new innovative university-company partnership forms, management of university research capacity etc [2]. But the other important side of the university - teaching and learning - has been very seldom mentioned in the context of literature on open innovation [3].

E-learning has been one of the main fields of innovation in the teaching and learning side of higher education for many years already [4]. E-learning can facilitate new active learning methods into the traditional learning process, present new ICT-supported collaboration schemes for students, preparing them for future collaborative work in companies, can propose successful means to fight with premature dropping out etc. But as any tool, it can also cause problems due to misuse and bad quality.

Quality of everyday educational practice in the higher education system lays mainly in the hands of higher education organizations themselves as the national ministry has only indirect influence - approving the study

programs, distributing financial support between institutions and programs etc. How a collaboratively prepared system for quality assurance in e-learning can work for an open innovation on national level is the theme of this paper. We look at organizational means for quality assurance in e-learning in Estonia - a country with 39 universities and colleges and 42 vocational schools.

QUALITY ASSURANCE AS THE TOOL FOR OPEN INNOVATION

Innovation is not an act, innovation is a process. Another important process for learning is quality assurance. P.Gupta writes in [5]: “I see a striking commonality between quality improvement and innovation.” It is said about business development, but applies also to the learning process development.

E-learning also is not a one-shot issue, it is a long process with an ultimate aim to improve the quality of learning. But as e-learning tools are in the state of flux all the time therefore the introduction of e-learning starts a never ending process of improvement. One of our slogans expresses it as follows: the aim of the introduction of e-learning is to remove the first “e” from e-learning, i.e. the development has to produce the situation where all learning happens in an ICT-rich environment and there is no border between e-learning and traditional learning. The quality assurance process in e-learning can be used as an innovation in higher education.

ESTONIAN SYSTEM FOR QUALITY ASSURANCE IN E- LEARNING

1 Retrospective view of Estonian e-learning quality assurance system development

In 1999, Estonian universities had only 14 e-learning courses, but with thirteen years this number has increased to more than 7000. This rapid growth has led to the need to actively disseminate "best practices" among the novice course designers, to create instructional materials on how to build a good e-learning course and to identify e-course quality criteria.

Since 2004 Estonian e-Learning Development Centre which coordinates developments in the e-learning field in Estonia runs a contest for the title "E-course of the year". To run this contest, e-Learning Development Centre has formed a quality assurance task force with the following aims:

- To create guiding materials for the instructional design process of e-learning and blended learning courses, aimed at the teaching staff and educational technologists of higher and vocational education organisations.
- To publish quality criteria for e-learning courses and design the process of awarding "Estonian e-Course Quality Label".

The process of awarding the e-course quality label was initiated in the autumn of 2008. Development of the quality label awarding process coincided with compilation of the manual for teachers [6] which was created on the basis of the "Quality Manual for E-learning in Higher Education" [7]. Manual focuses on how to create an e-learning course with a good quality. This is a step by step guide on how to create your first e-course or improve existing and operational ones. Essential quality criteria are indicated at the end of each chapter of the manual which have to be met in order for the e-

course and its instructional process to be recognised of fulfilling defined requirements. The latter serve as a basis for self- and expert evaluation within the quality label process.

2 Quality assurance process

The entire process of awarding quality labels is structured on three tiers [8].

1. **Self-assessment level.** Each applicant will make a self-assessment based on a given form. The purpose of this assessment level is to increase the awareness about the acquired quality criteria (see Table 1) and to motivate authors to analyze their e-courses.
2. **Organizational level.** The most important role of organizational level is to assure that the content of the course is at high level and fits the need of the curriculum. It also adds the information about learners' feedback, which is collected usually centrally by the university.
The organizational review is also based on a fixed review form and it is completed by the person authorized by the organization (e.g. manager of the curriculum). Applicant has to submit the organizational review along with the proposal form.
3. **Expert level.** The expert level assessment, as the name hints, consists of evaluation by a group of e-learning experts (a third objective party). This level concludes with the decision to either recognize or not recognize the course with the quality label. Evaluation at the expert level takes place after the authors submit the self-assessments and organization reviews, and is also based on a pre-determined assessment form. Questionnaire is almost the same as at the self-evaluation level. Only the questions which are difficult or impossible to evaluate by the experts are omitted (see Table 1). Every applicant will receive feedback on their e-course from the panel of experts. Feedback to the course is consensual. During the first round, three experts evaluate the course by themselves.

In the second round, they discuss their evaluations and try to find a consensual decision. Finally, they write a consensual feedback to the applicant. Expert groups who assess e-courses are formed from the network of educational technologists and experienced teachers. It must be noted that

the process evaluates only criteria related to e-learning design and elements and not the content of the learning materials. Quality of the content of the learning materials will be evaluated at the organisational level.

Question	Self-assessment level	Expert level
Analysis of needs, target group and context		
1. Course corresponds to the needs and capabilities of the target group	x	
2. Course has defined objectives and learner-centred learning outcomes	x	x
3. Course content corresponds to the learning outcomes	x	x
Planning the learning process		
4. Course syllabus is based on the requirements of the teaching institution	x	
5. Necessary prior knowledge and skills in order to participate in the course are clearly outlined	x	x
6. Learning activities and assessment principles correspond to learning outcomes	x	x
7. Principles of assessment and feedback are communicated to learners	x	x
8. Course materials and activities are in line with course volume	x	x
9. Formation of study skills is supported (learners are guided towards reflection, improvement of time management skills etc)	x	x
10. Technological resources support learning process	x	x
11. In the planning phase, the course is outlined in a way that the learning process is coherent in an online environment	x	
Course development		
12. Course is well structured and easy to use	x	x
13. Appropriate mediums are used to deliver materials (e.g text, pictures, animations, audio, video etc)	x	x
14. Learning materials are produced according to good practice of digital materials	x	x
15. Learning materials are created according to copyright	x	x
16. Delivery mode of materials takes into account technical constraints of learners	x	x
17. Study guide is thorough and complete and in case of a partly online course includes an overview of face to face sessions	x	x
18. Use of learning environment does not necessitate additional costs for extra software	x	
19. Course is tested before implementation in a real learning process	x	
20. Course is technically in good condition (links work, necessary applications run etc)	x	x
Implementing the course		
21. Course supervisor undertakes several roles (technical, organisational, social and pedagogical) or involves additional assistance	x	x
22. Planned schedule is being followed in implementation of the course	x	
23. Active participation of the learner in the learning process is supported (mutual communication, creation of study communities etc)	x	x
24. Learners receive feedback on their strengths and weaknesses within the particular course and on general progress	x	x
25. Learners have been informed of the assessment system and principles of communicating this information	x	x
Course evaluation		
26. Notes are being taken during the course in order to improve it in the future	x	
27. Course evaluation (feedback system) by learners is taking place in order to improve the course	x	x

Table 1 Questions of the self-evaluation and the expert form. These questions can be answered by clicking the radio button with levels No, Partially, Greatly, Fully. It is also possible to elaborate or comment all parts of self-evaluation / expert level.

During latter years more emphasis has been placed on preparation of applicants and evaluators participating in the process. Information days are held for applicants concentrating on topics such as an overview of the entire process, importance of self-evaluation and introduction of the online environment used in the application process.

For preparing the evaluators, information days and a compulsory training event are held in order to ensure thorough understanding of the quality label process, its main values and the evaluation criteria by the people embarking on evaluating the e-courses. One of the main aims of compulsory training is to acquaint the people in evaluation groups in order to facilitate cooperation, discussion and reaching consensus. It is worth mentioning that evaluating the e-courses is voluntary work where 40 e-learning experts from 27 different institutions from all levels of education participated during the last year.

The qualified courses are propagated as examples of good practice. Their authors make presentation of their courses in the seminar series titled „*Võrgustik võrgutab*“ targeted to teachers of universities, vocational and secondary schools. The best courses are introduced also in a special session of the Estonian annual conference on e-learning which takes place every spring.

Educational technologists have asked teachers what motivates them to participate in the quality label process [9]. This survey indicated and the teachers' feedback to the quality process confirmed that the majority of teachers were interested on expert feedback to their courses. The quality label itself was only the second motivator. According to this feedback, we have seriously invested in the expert training on how to give consensual feedback.

The quality label process also gives feedback to the applicants about what to improve in these courses. Authors of non-qualified courses are encouraged to make the improvements and to apply again. However, here seems that some

improvements in the quality label process are still required – only 4 courses applied after negative decision again in the next year. Despite the fact that all these 4 eventually got the quality label in the second round, this number of second round applicants is still too low and indicates the need for improvements in the feedback system.

3 Training courses supporting the quality label process

From year 2011, education technologists of University of Tartu developed a new e-learning training-course „How to prepare an e-learning course to be worthy of the quality label“. This course is dedicated to distribution of best practice of the quality label process and it was itself awarded with a quality label in year 2013. During this course, participants analyse, discuss and improve their existing e-learning courses. In year 2011 and 2012 altogether 32 teachers graduated from this course. 20 of them declared that they will apply for a quality label. Actual number of applicants was 14 and 13 of them (93%) were awarded with a quality label. This is a medium level training course for teaching staff which is especially dedicated to the quality process. Altogether, Estonian e-Learning Development Centre promotes 9 beginners level, 36 medium level and 7 advanced level training courses. All these courses are open to all Estonian teachers from any university or vocational school.

In addition, already from year 2008 a special course to doctoral students, e-Learning Technologies in Higher Education, was designed in University of Tartu. One of the basic materials of this course is the „Quality manual for e-courses“. Over last five years, there are more than 200 graduates from this course.

4 Software support for the quality system

Although the quality system has been in place for many years already, special software system to support the process was first implemented in

year 2012. Online software (see screenshot in Figure 1) consists of tools for quality label process, for its management and an interactive version of “Quality Manual for E-courses”.

Figure 1 Screenshot of the Estonian e-learning quality web

The goal of the software is to support all three levels of the quality label process. At self-evaluation level, the applicant has questions and can answer them using radio buttons. If something in question remains unclear, he/she can click on the question sign and the explanation of criteria will be displayed. Also, the explanation of radio-button levels (No, Partially, Greatly, Fully) can be displayed if needed by applicant.

Everyone can complete a self-evaluation form to analyze his/her e-course. Doing self-evaluation does not presume that the user has to participate in the quality label process. By following the guidelines next to each criterion, user can decide if the e-course meets the requirements of a high-quality e-course or if anything in it needs to be improved. If user thinks the course is good enough to take part in

the quality label process, he/she has to fill in the application and can use the self-evaluation filled in before.

For experts, the software enables individual evaluation first.

In the second round at group level, the software generates the evaluation draft on the basis of group members' individual feedback, so that the group members can use this during discussion. Group evaluation will start immediately after all group members have finished their individual evaluations and this step has to lead to consensually decided marks and feedback to the applicant.

Both applicants and evaluators can give feedback to the quality label process itself in the web. Feedback forms are open from the time

user is counted as the applicant (from submitting the application) and evaluator (from starting the evaluation process). Feedback can be edited as many times as needed during the feedback period. Upon every step the system supports user according to the phase user is at. Everything that is connected to the user or needs user's attention (filled in self-evaluations, courses for evaluation and so on) will be displayed on user's homepage.

Like every online database-based system, the quality web is a good tool for collecting statistics. Although the system is new, there has already been interest for that from other quality evaluation processes in the field of education in Estonia.

EVALUATION OF THE QUALITY ASSURANCE PROCESS

One principle of the quality assessment is the continuous improvement of the process. To evaluate and make adjustments to the implemented process, the feedback questionnaires are distributed to:

- Applicants whose e-course was recognized with the quality label;
- Applicants whose e-course did not receive the recognition;
- Experts who evaluated all the submitted e-courses.

The results of the feedback will be analysed by the quality assurance task force. The results give valuable input to improve the guiding materials and the application process: to edit the handbook ("Quality Manual for E-courses") and evaluation forms.

Process for applying for an e-course quality label has been run for five years (see the overview of the results in Figure 2). Approximately 35 e-courses have participated in the application process each year.

While only 39% qualified for the quality label during year 2008, the rate of successful applicants for the most recent year was 63%. The feedback from applicants suggests that this rise can be attributed to clearer understanding of quality criteria and better preparation of evaluators and streamlining of the process itself.

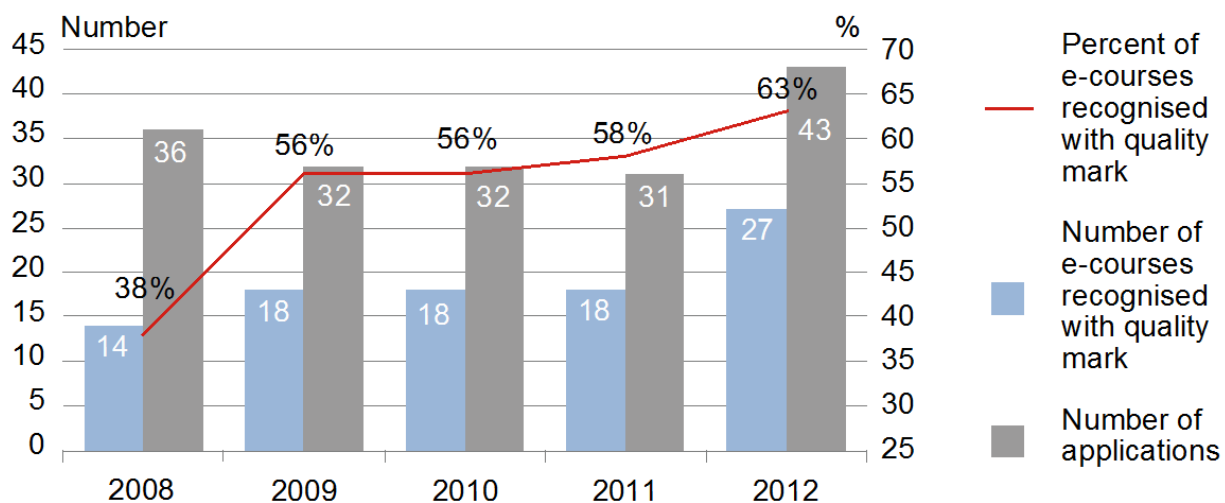


Figure 2 Recognition of quality label

A MODEL OF OPEN INNOVATION IN QUALITY LABEL PROCESSES

Researchers in company management and innovation area have suggested many models how open innovation is working in companies. O.Gassmann and E.Enkel [10] list 3 archetypes: (1) the outside-in process, (2) the inside-out process, (3) the coupled process. L. Dahlander and D.M. Gann [11] formulated 4 types, based on their research of 150 open innovation articles in Thomson's ISI Web of Knowledge. Their classes are created depending on inbound/outbound and pecuniarity/non-pecuniarity bases. In both studies, universities have been usually only mentioned as one of the typical open innovation partners for companies (others being customers, suppliers, research institutes etc).

We believe that e-learning development is one of the most important innovation processes in the teaching and learning side of higher education. If we compare e-learning quality assurance system with above mentioned open innovation models for companies then this process is different and will not properly fit into suggested classes. But it resembles many models of company-higher education collaboration models from the past and nowadays. CODASYL (Conference on Data Systems Languages [12]), formed in 1959, was a university-company collaboration body which designed the programming language COBOL, formed a Database Task Group and designed a network model for databases. The latter was a real innovation at the time, a step that gave basis for development of new database management systems and database teaching in universities for decades. Now IMS GLC (Global Learning Consortium [13]) is a global non-profit organization to enable the growth and impact of learning technology in education and corporate training. Many well-known companies and universities belong to this organisation. We think that our national effort will serve the learning communities in Estonia as the

CODASYL did in 60ies and 70ies and as the IMS GLC is doing it now globally, setting the framework and quality criteria. Probably it is too early to ask for a suitable model of open innovation for educational institutions as we are not yet at the stage where companies were in 2008: where ~50 research articles were published yearly about open innovation. And when after some years somebody will start to build suitable open innovation models for teaching and learning in higher education then we hope that our case supports this process as one of the cases.

CONCLUSIONS

In this paper we looked into the innovation of teaching and learning of the Estonian universities and vocational education institutions giving an overview how the system for quality assurance in e-learning was collaboratively prepared for an open innovation at national level.

In 2008, the e-Learning Development Centre in Estonia formed a quality assurance task force with the aim to create guiding materials for the instructional design process of e-learning and blended learning courses, publish quality criteria for e-learning courses and design the process of awarding "Estonian e-Course Quality Label". The entire process of awarding quality labels is structured on self-assessment, organizational and expert level and is supported by special interactive software. During latter years more emphasis has been placed on preparation of applicants and evaluators participating in the process. Much emphasis is placed on continuous evaluation of the process itself and making adjustments to the implemented e-learning quality assurance system process using the statistics collected by the quality web software and feedback from applicants and experts who evaluated all the applicable e-courses. The results from the feedback give valuable input to improve the guiding materials and the application process. These all are the tools for the open innovation in education.

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A View on Personal Learning Environments through Approaches to Learning

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OVERVIEW

In the past years the impact of social media in students in Higher Education has been remarkably significant (Pew Research Center, 2010; Tapscott, 2009). In order to exploit the potential benefits of these tools on education, we carried out different experiments using wikis and private social networks. Although the results were positive, we decided to move towards a more open approach using tools not directly linked to educational purposes. This paper reports on an experience in the use of Personal Learning Environments (PLE) to develop competences needed by students for lifelong learning. PLE is a concept that refers to the set of tools, devices, connections and networks that we used to learn. Nowadays building a digital PLE is key to achieve the goals set by the European Union.

The main objective of the paper is to analyse the influence of the approaches to learning of students in the reported effects of the PLE as well as in relevant aspects of the learning process.

245 students enrolled in a course on International Accounting participated in the experience of developing their own digital PLE. Some of the activities proposed used social networks, Twitter, blogs and wikis. The data were gathered through a web based questionnaire in two steps: 1) to obtain a priori self-confidence measures regarding communication in academic tasks and web related tasks, and 2) to obtain a measure of the approaches to learning of the students and self-confidence measures.

According to students' opinion, the experience was deemed as positive. In order to check the relationships between the impact of the experience and the approach to learning of students, a cluster analysis was performed. Students were classified into two groups. The cluster #1 presents lower scores on deep approach and higher scores on surface approach than students classified into cluster #2. Comparing the scores obtained in all the aspects of learning between the two groups, many differences arise. Students in the deep approach group indicated a significant higher impact in all measured aspects.

Results suggest that certain a type of students, more flexible and likely to manage information in their own, is able to use PLEs more effectively to learn than those who present a more pragmatic orientation focussed on passing the course.

KEYWORDS *Learning Approaches, Social Media, Personal Learning Environment*

INTRODUCTION

Social Web or Web 2.0 has become very popular in the last years, particularly among new generations that use this type of tools (such as social networks) on a daily basis. For example, the Pew Research Center (2010) reported that 95% of “Millennials” in the United States (generation born between 1977 and 1992) go online and that 83% use Social Networking Sites. In Spain, the AIMC’s survey on Internet users “Navegantes en la red” (October-December 2011) reports some facts and figures that describe the context of the educational experience that we analysed in this paper:

- Increase in the use of smartphones and tablets, geolocalized services and cloud computing applications.
- 68% of respondents accessed a social network the day before.
- Use of different social networks: Facebook 90%, Twitter 37%, Tuenti 25%, Google+ 25,5%.
- Main uses of social networks: friendship relationships 84%, hobbies 37%, professional relationships 32%.

Social software or Web 2.0 services are remarkably effective in connecting people and in facilitating the exchange of information, providing new opportunities for improving the acquisition of transversal competences in higher education. The European Commission (2008) highlighted the need for integrating Information and Communication Technologies (ICT) in all levels of education in order to support lifelong learning and innovation.

According to Elson Szeto (2000) innovation arise as a result of combining enhanced technology and improved methodologies. Particularly the Baldrige National Quality Program (2006) indicates in its *Education Criteria for Performance Excellence* that innovation is defined as “making meaningful change to improve an organization’s processes and services and creating new value for the organization’s stakeholders”. Within this

framework, the educational experience we analyse is intended to generate a better performance in the academic results of students through the use of information technologies that fit personal needs and interests. Arquero and Romero-Frías (2013) reported a positive impact of Social Web Services on higher education.

This paper pursues two objectives: (1) to analyse the impact of Personal Learning Environments in relevant aspects of the learning process; and (2) to test the existence of differences in the reported impact due to the approach to learning taken by the student and relevant self-confidence measures. As Arquero et al. (2010) indicate, the main studies on approaches to learning (Marton and Saljo, 1976; 1984) show two basic approaches to learning that may be adopted by students: “deep” and “surface” approaches. A student taking a deep approach tries to make sense of what is to be learnt in terms of ideas and concepts. In this case, the student’s conception of learning is ‘understanding’. In contrast a student adopting a surface approach conceives what is to be learnt as a series of unconnected facts that need to be memorised. The student’s conception of learning is ‘reproducing’.

Once set up the objectives and the theoretical framework the project, the next sections contextualized the Personal Learning Environments as an alternative to Learning Management Systems and then describe the experience carried out. The method section provides details of the sample and the instruments used to capture the variables studied in the article. Finally results are presented and discussed.

PERSONAL LEARNING ENVIRONMENTS AND LEARNING MANAGEMENT SYSTEMS

Supported by social practices and by institutional recommendations, we decided to use Web tools to improve an offline course on International Accounting by establishing a space to create, share and connect all type of content and relationships. Currently the most extended way to incorporate Internet into education is through the use of Learning Management Systems (LMS). LMSs, such as Moodle or Blackboard, are fully seated in educational institutions. Most universities have one or more of these systems as instruments to deliver virtual courses or to support offline courses. However, as mentioned before, the emergence of online tools, such as social networks, blogs, or wikis, facilitates new learning possibilities. LMSs are designed to facilitate management and administrative tasks done by teachers. However, the new generation of tools allows pedagogical designs based on creating and sharing contents and connections in the open environment of the Web.

Some authors (Brown and Adler, 2008) pointed out that LMSs do not fulfil all the expectations given to them. For example, Atwell (2007) indicates that learning design is usually more focused on the institution or the course rather than on improving students' learning. Also LMSs constitute closed environments that many times are used to provide contents, replicating the traditional offline system, without generating opportunities to acquire competences and knowledge from experience and interaction with informal learning spaces (emergent learning).

In order to solve these problems we decided to adopt a different approach to incorporate Web tools to education, the Personal Learning Environment (PLE). A PLE can be defined in different ways. Atwell (2007) indicates that a

PLE is not an application, but "is comprised of all the different tools we use in our everyday life for learning". Nowadays, many of these tools are social online services. Basically, a PLE is a concept that refers to the set of tools, devices, connections and networks that we use to learn. Social software (Redecker et al., 2010) is considered to be effective in developing essential skills (selecting relevant information, critically interpreting and analysing the socio-cultural context, working collaboratively, sharing knowledge, etc.). The development of a PLE integrating Web 2.0 tools allows students to face the real world context by exploring services that could be re-used for personal and professional purposes after the end of the formal education period. The development of a PLE could contribute to achieve the purpose of lifelong learning.

PLEs, instead of LMSs, allow the subject:

- To use for learning purposes tools that are generally used, in daily basis, for social purposes (i.e. Twitter, blogs, social networks, etc.).
- To create a sustainable environment for lifelong learning that goes beyond the formal educational period at the university (Atwell, 2007).
- To develop the student's own digital reputation (personal branding) to facilitate employability.

DESCRIPTION OF THE EXPERIENCE

By definition a PLE is personal, however we proposed the students to explore a set of commonly used web tools that are aimed to achieve different objectives (see the table below). Students could use their own profiles if they already had presence in the different types of tools (for example, students with a personal blog didn't need to create a new one).

Tool	Type	Use	Activities included in the final evaluation	Assessment
Facebook	Social Network	We set a private group to communicate and coordinate activities in the course.	-	-
Twitter	Microblogging	To disseminate information and to interact with other users.	To search and disseminate information using a particular hashtag #NCI2011.	5%
Blog	Publishing platform	To create content with a critical point of view.	To write two critical articles in the own student's blog on business issues.	10%
		The teacher's blog was used to publish activities and materials for the course.	To write a short essay about the use of the PLE.	5%
Descuadrando.com (open encyclopaedia on business)	Wiki	To create content with a neutral and objective point of view.	To write two encyclopaedia entries.	10%

Table 1 Commonly used web tools

In addition to the activities indicated in the table, the students had to do a final exam (70% grade). Other tools such as Slideshare or Google Docs were used during the course.

METHOD

Sample

The sample is composed of 245 students enrolled in International Accounting, an elective subject taught at the Business & Administration Degree. The vast majority of students (87%) were enrolled in the business degree, the rest in the joint degree of law and business. Most students are enrolled in high courses, more than 75% in 3rd and 4th courses. By gender, the composition of the sample is 37% male, 63% female. Students' age ranges from 19 to 32 years old, with a mean of 19. Valid questionnaires were obtained from 168 students.

Instruments

The data were gathered through a web-based questionnaire in two steps. The first set of questions was designed to obtain *a priori* self-confidence measures regarding communication in academic tasks (6 items) and tasks related to

tools (14 items). These questions were designed to be answered from 0, no confidence at all, to 10 total confidence, being 5 just acceptable.

The first instrument also included the N-SPQ 3f, a questionnaire designed to measure the approaches to learning of the students. This instrument is a modification of the reduced version of the SPQ-3f by Fox, McManus and Winder (2001) adapted by Fernández Polvillo and Arquero (2011).

This first part of the questionnaire was distributed during the first week of the course. The second set of questions is based on the instrument used by Arquero and Romero-Frías (2013) and was designed to obtain information on the impact of the innovation in relevant aspects:

- Active learning (7 items)
- Collaborative learning (11 items)
- Content learning (4 items)
- Communication skills (4 items)
- Critical thinking (3 items)
- General assessment (4 items)

The questions are to be responded in a 5 points Likert scale from 1 total disagreement to 5, total agreement, being 3 the neutral point. Scores on individual items were used to build additive scales for each aspect assessed. In order to allow comparisons, those scales range from 1 to

5. This part of the questionnaire was delivered once the course was ended.

RESULTS

The majority of students had previous contact with the tools. For example, 95% indicated that they had a Facebook account before the course, and close to 50% access this account at least once a day. This percentage rises to 96% when the question points to the Internet in general terms.

The relevance of laptops and mobile devices is increasing: 92% of students have a laptop and 52% a smartphone with Internet access.

Regarding the impact of the innovation in relevant aspects of the learning process, in general terms the experience was deemed very positive by students in all aspects covered in

the questionnaire. As table 2 shows, students reported a positive impact of the experience in all the aspects assessed.

The tools integrated in the PLE are expected to have a positive impact on collaborative aspects of learning. The results support this expectation (mean: 4). Analysing in depth the component of this score (table 3), students indicated a very positive impact due to the possibility of learning from other students: from the opinions and contributions and by getting questions solved by other students.

The second research objective aimed to investigate whether there was any influence of the approaches to learning of the students and the perceived effect of the innovation. In order to check these relationships a cluster analysis (k-means) was performed. Students were classified into two groups, according to their approaches to learning (table 4).

	Active learning	Collaborative learning	Communication skills	Content learning	Critical thinking	General assessment
Valid	168	168	168	168	168	168
Missing	77	77	77	77	77	77
Mean	3.8	4.0	3.6	3.7	3.8	3.9
Standard Deviation	0.7	0.5	0.6	0.7	0.5	0.7
t-test sig.*	.000	.000	.000	.000	.000	.000

* t-test comparing the mean against the neutral point (3)

Table 2 Impact of the innovation on learning - descriptive statistics

The tools used and activities developed...	Mean	Mode	Std. Dev.
- Helped us to solve questions and doubts about the subject to other students.	4.42	4	0.60
- Allow all the members of the class to benefit from the contributions and opinions made by the students.	4.39	4	0.62
- Make easier to approach the teaching staff to get questions and doubts about the subject solved.	4.38	5	0.72
- Allow sharing easily other interests (academic or personal) with other classmates.	4.21	4	0.74
- Help to the diffusion and sharing of our own ideas and points of view to the rest of the group.	4.15	4	0.69
- Facilitate the teamwork of the groups.	4.08	4	0.73
- Helped us to better communicate with the classmates.	3.92	4	0.83
- Helped us to learn from and consider the views and opinions of other students on a certain topic.	3.89	4	0.64
- Allow an easier coordination with other students for other activities out of the subject (i.e. tasks or papers for other subjects).	3.86	4	0.77
- Helped to get in touch with classmate that otherwise we could not meet.	3.60	4	0.91
- Helped to adopt a more proactive attitude opening links with classmates.	3.52	4	0.86

Table 3 Collaborative learning items - descriptive statistics

The cluster #1 (n: 64) presents low scores on deep approach and higher scores on surface approach than students classified into cluster #2 (n: 75). In general terms, students in cluster #2 present a more appropriate approach to learning in comparison with their counterparts.

	Cluster	
	#1	#2
Deep approach to learning	15.33	21.79
Surface approach to learning	14.33	11.10
Significance of differences	.000	.000

Table 4 Clusters

Comparing the scores obtained in all the aspects of learning between the two groups, many differences arise (table 5).

		N	Mean	Std. Dev.	t-test sig.
Active learning	1 surface	64	3.58	.74	.000
	2 deep	75	4.03	.46	
Collaborative learning	1 surface	64	3.91	.45	.000
	2 deep	75	4.19	.39	
Communication skills	1 surface	64	3.44	.62	.000
	2 deep	75	3.81	.56	
Content learning	1 surface	64	3.52	.71	.000
	2 deep	75	3.92	.55	
Critical thinking	1 surface	64	3.66	.58	.001
	2 deep	75	3.97	.45	
General assessment	1 surface	64	3.64	.84	.000
	2 deep	75	4.13	.53	

Table 5 Impact of the innovation on learning by cluster

Students in the deep approach group indicated a significant higher impact in all measured aspects. Therefore, students that present a more appropriate approach towards learning are also more likely to obtain a better result from innovations.

DISCUSSION

The main aim of this paper is to assess the impact of using Personal Learning Environments in an offline course on International Accounting. The PLE included a selection of digital tools that fits the learning subject's needs.

The results are indicative of a positive impact in all the aspects of learning measured. This impact is similar to the results obtained using specifically designed SNSs (Arquero & Romero-Frías, 2013) with the advantage that general-purpose tools are available outside the academic context and most of the students have previous experience (at least with some of them). This previous experience could act as a facilitator that allows obtaining similar results in comparison with specifically designed tools where students have no previous experience and, as are tools normally used by students, are more likely to be also used in the future for learning purposes.

Social media are an important part of the Personal Learning Environments of students. The study shows that the approach to learning adopted by the student could be a relevant factor to explain the academic results when this sort of activities are proposed. Deep approach students tend to consider the educational experience as having a higher impact in terms of acquisition of competences, and present higher levels of self-confidence in their own capabilities (especially in communication tasks). In this way they can have an active role in the learning process, not as a mere consumer of content.

The relationship between approaches and perception of the effectiveness of innovations has relevant implications. Ahmadi, Helms and Raiszadeh (2001) pointed out that students are asked to evaluate teaching and teachers in most universities throughout the world, being those evaluations used in promotion, tenure and merit decisions (Baldwind & Blattner, 2003). In Spain, such evaluations, inscribed in a "quality assurance" system rely heavily (when is not the only indicator) on assessment by students. Castro et al. (2012) compiled a series of papers on this matter. Entwistle and Tait (1990) found that students with contrasting approaches were likely to define effective teaching in ways that reflected their own orientations. Our results indicate that *a priori* approaches to learning of students have an impact on how they perceive and evaluate the effectiveness of teaching. Therefore, the same teacher, using the same methodologies could be assessed differently just depending on the orientations of students (factor that is beyond the control of the teaching staff), raising some doubts on the validity of any quality assessment that rely on such measures.

Further evidence on the impact of ICT in education is needed, particularly in the use of social software, personal learning environments and quality assurance in education.

ACKNOWLEDGMENT

This work was partially supported by the Junta de Andalucía – FEDER (Proyectos de Excelencia: SEJ-02670) and by the program "Educational Innovation Project" supported by the University of Granada (Spain).

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Evaluating staff led initiatives in teaching and management innovation in an online university: the case of the Universitat Oberta de Catalunya

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OVERVIEW

This paper investigates a procedure that promotes innovation in an online university then looks at methods of evaluating these innovations. By encouraging cooperation between management and academic teams, 30% of University staff became autonomously involved in 70 proposals to innovate solutions for a variety of educational and management needs.



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INTERNAL SUPPORT TO INNOVATION

The Universitat Oberta de Catalunya (UOC)¹ is an online university that has innovation as a transversal feature in all its activities and processes. Innovation is part of the annual objectives of the entire academic and management staff.

The Office of the Vice President for Research and Innovation provides a framework where ideas are collected and converted into projects. To support this, three mechanisms were established. These comprised of two commissions related to innovation (Innovation Council and Innovation Support Council) and one Program of Innovation.

The Innovation Council acts at a strategic level in consultation with the Innovation Support Council to develop the selection and evaluation of internal processes related to innovation. The Support Council is made up of one lecturer from each department, one person in charge of each of the management areas related to innovation and the Office of the Vice President for Research. Finally, the Innovation Program ensures that the main ideas of the strategic plan, as well as the main objectives of both councils, are achieved and managed in the most optimal way.

Two type of innovation are fostered. The first, emerging innovation is bottom up and focuses on an internal call that looks for innovative

projects in learning support and management. The second, institutional innovation is top down and closely aligned to the strategic vision of the university.

The next section will describe the procedures used in each case.

Emerging innovation: APLICa call

The Innovation Program manages an annual call (APLICA). This call looks for innovative projects in learning support and management which arise from existing staff needs.

The last call (2012) had a budget of 60,000€ and received 70 proposals with 55 led by academic staff and 15 by management staff. As the university has 725 employees more than 30% (227) were involved. The 2012 call was the most widely participated in over the last 6 years, as in total from 2007 to 2012, 963 staff took part in the process.

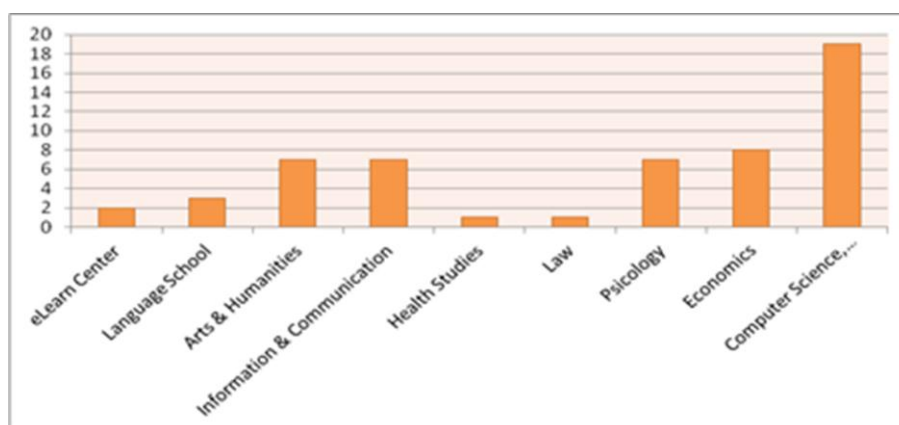


Figure 1 Graph showing distribution of APLICa 2012 calls from different academic departments

¹ <http://www.uoc.edu/portal/en/index.html>

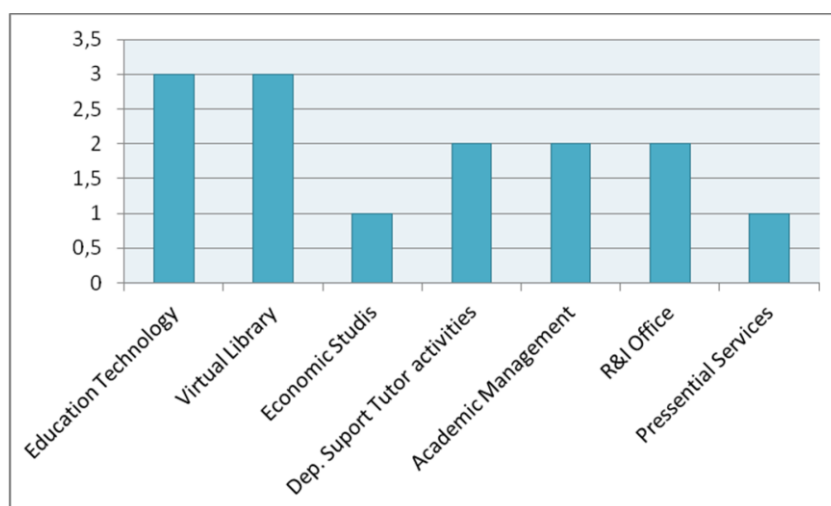


Figure 2. Graph showing distribution of APLICA 2012 calls from different management departments

The total amount of people involved was counted as 338 because almost half of participants were involved in more than one proposal. The most active lecturers leading projects came from the IT, Multimedia and Telecommunications Department (19 leading proposals, as shown in figure 1). The management department that generated most proposals was the Virtual Library (3 leading proposals, presented in figure 2). It is necessary to add that the Educational Technology Department led only 3 proposals but were present and helped enforced a majority of academic proposals as partnerships

The 2012 APLICA call evaluation process was performed by the Innovation Support Council. Criteria for assessing the proposals were organized in four sets. The first set focused on interdisciplinary and transversality. Administrative data was assessed for each project. That is to say, the Council looked for project proposals made up of lecturers from different departments and disciplines. It was also considered valuable to have a project consortium that involved a mix of academic and management staff. The second set looked

at formal aspects such as the main objectives, product and results expected or problems and needs to be addressed. The next set of indicators reviewed the internal consistency of the proposal, in other words, the viability, applicability and scalability of the projects. The last set was concerned with the required budget. The number of people benefitting from the innovation, students or management staff, was also a primary concern.

After this evaluation process 15 proposals received funding. However, 24 more were created after being integrated into existing projects to broaden scope (10), modify existing budgets to encourage innovation (7), getting more support from academic departments and management areas (5) and by merging proposals that addressed similar needs (2).

The last phase of the procedure was to categorise the projects financed into strategic projects (INNOVA) or transferrable projects. These two types of project are explained in more detail later in the paper.

Institutional innovation: INNOVA projects

An INNOVA project is a strategic innovation project developed and funded by the university. There are two main ways to be considered an INNOVA project by the Innovation Commission. The first is by sending a proposal through the Innovation Program team and the second is to be categorised as a successful APLICA project with the ability to be developed in terms of strategic elements. The overall consideration was how the project could impact the institution.

This can be achieved by different factors, the most common being, the composition of the teams themselves. The partners are heterogeneous and bring the knowhow, goals and needs from different academic and management departments.

INNOVA projects receive management support from the Innovation Program. This team assess the projects following a set criteria. This involves taking into account the CV of the team leader, possible risks involved with the proposal, further applicability and transferability, satisfaction of the beneficiaries with the results and time and level of achievement.

In 2012 two INNOVA projects started the m-UOC and OpenApps, which both involved more than 50 participants. The m-UOC is a project that leads the university from the current multiformat to implementing mobility, multidevice and multimedia, that is to say m-learning. Many departments at UOC have worked during the past years to integrate the academic activity into mobile devices to make our university more flexible and adaptable to new trends. The mUOC project is focused mainly on two aspects: (1) Identifying and promoting existing key projects, and (2) facilitating the implementation and adaptation of this multimedia and multidevice scenario. mUOC reflects the commitment of the UOC to mobility and multimedia contents to provide more possibilities and better performance for

a learning process that combines the use of PC, tablets and mobile phones.

The other strategic project of 2012, OpenApps, is a platform that ran from July that collected teaching experiences and open apps from the UOC. Open Apps makes available and opens up to any person or educational institution a catalogue of applications and innovative teaching experiences generated by the UOC. In this way a framework of internal projects may be used freely in other environments looking for open collaboration. These teaching experiences and apps were conceptualized, developed and piloted by UOC teachers and developers. In the near future Open Apps will provide access to students' App designed and be developed by them.

INNOVATION PROGRAM: GENERAL INDICATORS FOR EVALUATION

The indicators defined for evaluating the innovation activity in the UOC Innovation Program include data coming from all departments and areas of the whole university.

On the one hand, innovation is evaluated from data generated by the support and service activities provided by the Innovation Program itself. That is to say from evaluating the activity of the two funding schemes, APLICA and INNOVA.

On the other hand, innovation is a cross boarding feature in all UOC activities and processes. Therefore, innovation is present in the annual objectives in all the university departments and must be evaluated. The Innovation Program collects all these indicators and analyses them in order to facilitate regular feedback on the strategy and general management of the UOC. In this sense, the Innovation Program identifies, collects and updates data that reflects the actual innovation effort dedicated in the UOC. Data coming from the number of initiatives and budgets is presented in table 1.

Innovation Indicators at UOC	2012
UOC innovation projects (IPD and other departments)	39 (24 from the Innovation Program: 22 APLICA and 2 INNOVA)
UOC innovation successful results (projects from 2012 already in production)*	2
Innovation Budget	323.000,00 €
Innovation Program Budget	230.000,00 €
Co funding from other departments	18.000,00 €
External funding	75.000,00 €
Departments involved in innovation projects	11
Proposals received in the Vice Presidency for Research and Innovation for INNOVA 2013	4

Table 1 Innovation indicators used by the Innovation Program to provide annual feedback

During the academic year 2011-12 data is collected to fulfil the given indicators and processes. Afterwards results have to be analysed to enhance existing internal calls, review current indicators and adapt common procedures and activities to successful innovations. Furthermore, when possible, knowledge will be transferred to other education institutions and to society in general.

SOME THOUGHTS

The key idea behind the action plan is that innovation, a characteristic feature of our institution, underlies everything we do.

The vicepresident's office is responsible for creating an environment in which new ideas and initiatives that arise in the course of the daily work routine can be turned into specific projects. These projects can then developed with all the necessary resources and evaluated before approval is granted for their implementation.

The way we try to achieve this is through APLICA call and INNOVA projects. However, we need to analyse the results of this action plan in more detail and see if this is the best way going forward.