



NETWORK PROMOTING E-LEARNING FOR RURAL DEVELOPMENT

CONFERENCE PROCEEDINGS

INTERNATIONAL CONFERENCE

ICT for inclusive learning: the way forward

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ICT for inclusive learning: the way forward
CONFERENCE PROCEEDINGS

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INTRODUCTION

This conference aims to promote discussion of inclusive learning in Europe while providing networking and collaborative opportunities for continuing education and training professionals, providers of e-learning, social partners and policy makers in lifelong learning and related fields.

The conference focuses on the role of ICT in increasing access to lifelong learning, in particular non-formal and informal learning, in territories facing the risk of education exclusion due to geographic remoteness, social disadvantage, deprivation or poor facilities. Improved access to inclusive learning would facilitate economic development and enhance quality of life in disadvantaged communities, including disadvantaged rural areas.

The conference builds on the results of the Euracademy Observatory – e-ruralnet project and network, www.e-ruralnet.eu, which address the issue of supply and demand of ICT-enhanced learning in Europe. The research carried out by the e-ruralnet network in 11 countries focuses mostly on rural areas, looking closer at technological and pedagogical innovation that would facilitate inclusive learning.

The conference themes, which reflect the conference sessions and correspond to the chapters of this volume, include:

- ICT for inclusive learning – setting the scene
- Building an inclusive learning society
- Introducing innovation in the learning environment
- Best practice in rural areas
- Innovative learning methodologies
- Different facets of inclusive learning
- Guiding, motivating and mentoring learners
- Technological and delivery innovation
- Pedagogical innovation

We would like to thank all the contributors to this volume, coming from 16 countries across the world, who kindly sent their papers prior to the conference, so that this volume of proceedings could be printed in advance and delivered during the conference.

The Scientific Committee of the conference

E-COLLABORATION TOOLS AND STRATEGIES FOR RURAL AREAS ADDRESSING THE NEEDS OF SPARSE COMMUNITIES IN DEVELOPED COUNTRIES

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Abstract

Rural areas, and in particular agricultural communities, while sharing emerging learning needs with other sectors, show also specific peculiarities. So, to the generic needs on continuous education that arise from a global change in the society, they add the specific needs deriving from being, almost by definition, sparsely populated area. Furthermore the heterogeneity of the territories has lead in most countries to a regional governance of the sector. But while some knowledge is actually territorial specific, much knowledge remains shareable between different communities, with the same competences required in every region. On top of this, modern agricultural policies increased the pressure of a switch from a few "traditional" supported activities to a wider array of activities to better meet marked demand, where increased competition require a quicker technological progress.

To address these needs, new technologies and methods that emphasis learning by collaboration and knowledge sharing seems particular appropriates. We therefore advocate on this paper e-collaboration as a way to boost traditional e-learning approaches, where roles division between "teachers" and "students" remain strong, in the direction to bottom-up approaches, where the objective is to provide networking services trough easy to use but powerful tools for the self-formation of communities and socialisation.

Keywords: agriculture, rural area, knowledge sharing, learning communities.

Introduction

This paper advocate the usage of ICT tools to promote a collaborative social learning environment in the agricultural sector. The paper is organised in two parts, in the first one (sections 1 and 2 and 3) we present a context analysis to highlight the advantages of such approach, and in the second one (section 4) we give an example of how these tools could be practically implemented.

In fact the idea that ICT tools can be used to build specialised social networks (e.g. sector specific networks or targeted oriented communities) is becoming quite common, with no academic publications on this topic in 1990 and over 543 publications in the year 2007 alone, according to [1]. However, due a physiological isolation from research teams with sociological and economical backgrounds on one side and research teams more oriented trough the ICT sector, often this idea doesn't get applied.

The importance of the technique shouldn't be dismissed. For example, when Google arose as the most successful internet search engine, it did it without inventing any new concept, as search engines was already in the market for a while. It was just a marginally better search (and storage) algorithm that allowed Google to overcame them.

However, on the other side, we shouldn't ask ourselves which practical implementation to adopt for newly available ICT tools. As noted in both [2] and [3], the right approach should start instead from the educational needs of individual and communities and the research question should be the opposite, that is what is the most appropriate, cost-effective and sustainable way to address that needs.

Accordingly, our approach starts from an analysis of the farmers needs (section 2) where we evidence how the main problematic, at least in the developed countries, is the shortage of an appropriate human capital rather than a financial or land one.

In section 3 we develop the idea of learning communities as a way to integrate both top-down formal education with bottom-up informal knowledge sharing, in a so-called hourglass approach.

Once our approach has been discussed, in section 4 we give a detail of the implementation at the platform level. Among other issues, we discuss the importance of delegation, manage user relationships and how to represent trust in a social network.

Finally section 5 concludes.

Farming learning needs

Citizens of rural area, while sharing similar needs to those of urban areas, have specific disadvantages. [2] cites that geographical remoteness means transportation difficulties; that distance from markets can be a disincentive to new business growth.

To this issues [4] adds to note how rural areas are characterised by a plethora of micro-businesses (both land-based and high tech), meaning that an employer-based and employer-led initiative seems almost bound to fail. Self-employed people, for example, have no choice but to take responsibility for their own learning. Micro businesses means also that the owner must make decisions on a heterogeneous range of topics, for many of which no "exact answer" exist ([5]).

In the specific contest of farming, the impossibility to implement economies of agglomeration has lead the economic agents in the agricultural sector to disperse their activity along the regions. And, as their activity is strictly interconnected with the territorial characteristics, also the governance of the sector is typically strongly distributed. E.g. in Italy the agricultural sector is a regional (NUTS2) delegated field. However, while some activities are indeed regional specific, others are much more general, presenting the needs of the same knowledge - both for the end users and for their governance bodies - within each local community. For example the technical information on how deep to till to save fuel and preserve soil while keeping high production levels, or the administrative skills required to apply for rural funding.

Further to that, [1] notes that the small size and spatially dispersed nature of most farming businesses is such that, unlike other industrial sectors, farmers are unable to carry out their own research and development (R&D) and there are no major players from which spillover R&D can occur. Overall, remoteness usually means a lack of access to education, training and professional updating.

However, in today knowledge-based society, human capital is often seen as the main source of competitive advantage. This is particularly true in the agricultural domain, where a new wave of political reforms are deeply changing the sector in the direction of a higher level of competitiveness. And, while up to recent times, there was a deep division between the period of (school or university) training and the period of the application of the acquired skills at work. The changing socio-economic conditions, in which the labour market has undoubtedly increased dynamism, made this approach inadequate.

To the traditional dichotomy between school and work (or acquisition vs. usage of the skills) a new model of continuous learning is prevailing where the two functions coexist requiring a greater level of flexibility to adapt to the different times, rhythms and needs of the learners.

If we have as objective to improve the human capital in the agricultural sector we can't direct our projects toward farmers alone. In fact [1], studying farmers network of practices, notes how many other people and organisations who are not farmers contribute to the learning and knowledge management of the individual farmers.

The reason of this is that "farmers are a very particular case as a network of practice as they are producing both a public good and are private enterprises. Enabling their practice means that they necessarily draw on a wide network of people, including those who are not part of their professional or practice community, (or network), yet are significant influencers on that practice".

From distance learning to e-collaboration

While distance learning is certainly not a novel approach in the agricultural sector, in the last decades, boosted by advanced in the ICT industry, there has been a resurgence of interest on distance learning as a potentially useful strategy for addressing human development issues. [3] offers a historical viewpoint on distance learning, with a list on mayor programs that have occurred since the 1960s.

We should distinguish programs for development countries and programs for developed ones very sharply, as objectives and issues are very different.

In the first case in fact the main objective is often to provide a primary education, reaching a multitude of users keeping costs down. Limitations in this case are more of infrastructural type, e.g. poor internet connections, sometimes even inadequate power supply. This often leads to a mix of delivery methods where low cost and conventional learning technologies continue to play a crucial role in distance education programs [6]. [2] adds that while pedagogical readiness about new technologies should be certainly taken into consideration, in developing countries "the motivation and determination of many learners in rural, disadvantaged areas often overcome what would be considered insurmountable

hurdles even in developed countries." Further to that, farmers in developing regions have a much lower age than farmers in developed regions and have more kids that are the real innovators in the farmer's families regarding ICT tools.

In developed areas the use of ICT to improve the human capital through distance learning programs in the agricultural sector is very different. Firstly the objectives are different: we analysed in section 2 that the aim is to provide a continuous education rather than tackle with basic education. Furthermore real limitations often don't arise from a shortage of ICT infrastructures, but rather on the pedagogical readiness of the farmers. [4], citing a UK government report, claims that internet access is more used in rural areas than small town or even larger towns.

However in both developing and developed countries we can also understand some common points: as noted in [2] and [3] other activities will lead the adoption of technologies used by e-learning applications, which are unlikely to be the primary reason for initial ICT take-up. E-learning is a growing market but e-shopping, communications and entertainment are the primary drivers of ICT take-up. This is true for both the infrastructural aspects (broadband, and multimedia devices in developed countries, smartphones in developing ones) and the pedagogical readiness. For example the usage of general-purposes social networks will make the users aware of concepts like login, post, thread, notification that can be used in a didactic context.

E-collaboration

When the target is reaching a large number of users requiring basic education, like in the developing countries, top-down approaches seems particularly suited, and the usage of ICT in distance learning can fruitfully take the shape of e-learning courses.

However, when the needs are instead of continuous education, like we saw in section 2 being the case for farmers in the developed countries, an approach that integrate both the top-down formal education with a bottom-up informal learning, in a so-called hourglass approach seems more appropriate, where "traditional" e-learning course provision acts as a stimulus for the "social learning" facilitation.

On this topic, [1] argues that "formal education and training, beyond initial training when farmers were young, did not feature as something that farmers wanted or that they perceived as particularly needed". This is also the conclusion of [2] stating that "informal learning, pursuing leisure interests, peer-to-peer learning in online communities, and accessing information (i.e., about health matters), are as big a component of the e-learning market-space as formal, accredited online courses".

Informal self-learning is anyhow something that has always existed in rural areas, as noted by [4]. This imply a change in the role of the institutions. Educational institutional in this context have the role of facilitating the informal learning opportunities within their targeted community. Already in 1996 [7] was stating, referring to the broader concept of community participation:

"What we do know is that if computer networking is a medium that can help increase community participation, it will not do this by itself. We, as citizens and community leaders must create the "structures" and the "space" - a virtual commons - within which discussion can flourish. We must cultivate group participation by moderating discussion, updating content, archiving conference discussions, and organizing information into dynamic, usable, and readily accessible, material full of feedback options."

So if the first visionary ideas about a community facilitating role of public institutions have at least 15 years, it is only recently that such approaches could have undergone practical implementation.

Often, when services migrate from the physical word to the virtual one of internet, they are inclined to replicate existing structures and metaphors, in order to use concepts to which users are accustomed in the traditional context. For example, in the Voice over IP industry (VoIP), the early versions of the software were modelled in an extremely faithful way to the characteristics and the look of the old-style phones.

Only when these services reach a maturity stage they can develop in a new original way, differentiating themselves while tacking advantage of the characteristics of the new media.

For example, referring again to the VoIP services, software can be enriched with contact and presence status, alphanumeric usernames, video communication, file transfers, screen sharing, etc. All this "new original features", if on one side they lead to a maturation of the service, covering the

needs of their users, on the other side they yield such services more and more far from the traditional telephones appearances and functions (Figure 1).

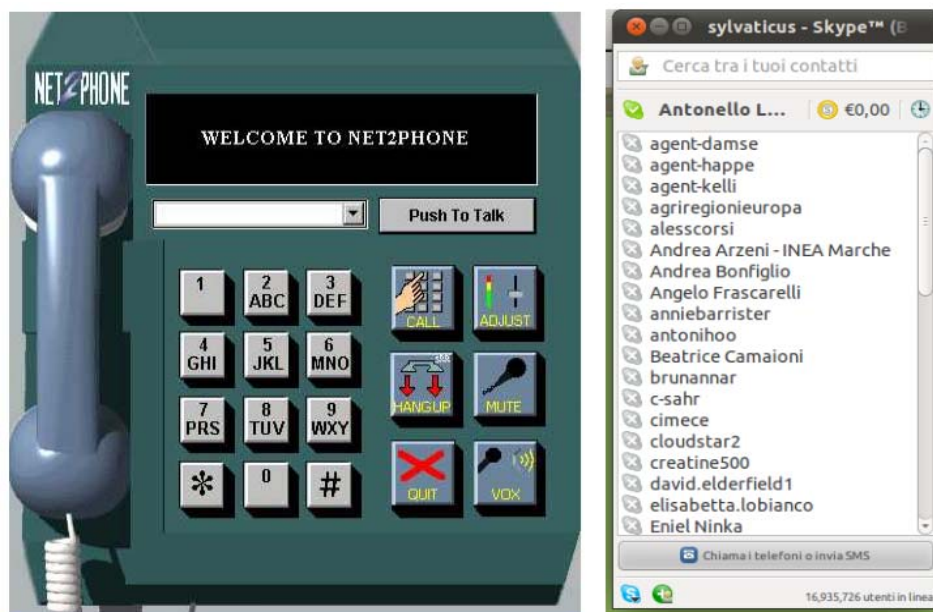


Figure 1: Processes need time to adapt to the new medium

The same can be said about learning initiatives. The first initiatives that used internet as a medium were merely a transfer in the virtual world of processes and methods consolidated in the traditional educational practices. Therefore, elearning initiatives were organised in "courses" and "lectures", virtual "classrooms" and "libraries", virtual "registers", etc. ...

Only with the advancement of the technology (and of the readiness) it is now possible to propose solutions that will allow not only to replicate existing learning approaches over the internet, but also to experiment with approaches that, while widely recognised for their pedagogical value, can not easily be used in traditional learning environments.

We think to social platform that integrate elearning structured courses with a social network approach as a methodological evolution, as it can better serve the needs of rural areas of a formal training with a informal, shared social learning.

The next section will highlight the early stage of such an application that we are currently implementing.

An e-collaboration platform for the Agricultural sector

This section presents the key features of a web platform in its early stage of development, designed to facilitate a collaborative social learning environment in the agricultural sector.

We move therefore from a contextual analysis of the agricultural sector to the software layer, where we try to describe the characteristics that the software should include to be able to perform the designed networking role.

Figure 2 shows the home page of the platform. The main point of this platform it to integrate top-down learning material with a social network. In this implementation the former take the shape of journal articles, structured e-learning courses, physical seminars, live webcastings. When the community manager post some content, he/she also choose which are the groups that are more related to the content. This one is always open to interaction (from simple comments to webcasting chat participation), effectively acting as a stimulus for the discussion in the relevant (sub) communities.



Figure 2: Home page of the platform

Access Control List

The social aspects are implemented through a series of features, the first one is the platform being able to recognise different roles in the community, each one with a different set of associated permissions.

In order to do so the platform must be able to use a flexible ACL (Access Control List) that allows to define roles and permissions associated to each role. Example of "permissions" are the possibility to view, create or edit a specific type of content or a component of it (e.g. a single field, like in Figure 3).

Permission	anonymous user	authenticated user	community manager
edit own field_working_organisation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
edit own field_working_organisation_dept	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_authors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_barometer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_body	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
view own field_article_emb_reviews	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
view own field_article_finestra_number	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 3: Each role has its own set of permission

Versioning

A second key aspect is that since the learning community must be able to interact using content as the main medium, the creation and updating of content must be at least partially delegated to the end users.

In order for this to work, the platform should allow for ex-post (community or centralised) verification rather than using ex-ante control. For example, rather than throwing any user-generated content in an approval queue, it should allow for an initial real-time automatic check against evident spam, followed by immediate publication and then community check (and, possibly, improvement). Therefore the platform must provide a full versioning of the content, with the possibility to see, merge and restore previous versions (Figure 4). While this is important for any social network, it is essential in a learning context, and it is no coincidence that versioning capability is the foundation of sites like Wikipedia.

Home > For an Ambitious Reform of the Common Agricultural Policy

View Edit Revisions Track Translate Devel

Revision	Show diff	Operations
23 Oct 2011 - 16:34 by admin	<input type="radio"/>	<input checked="" type="radio"/> <i>current revision</i>
23 Oct 2011 - 16:32 by Antonello Lobianco	<input checked="" type="radio"/>	<input type="radio"/> revert delete
12 Aug 2011 - 16:46 by Antonello Lobianco	<input type="radio"/>	<input type="radio"/> revert delete
Imported with node_import.	<input type="radio"/>	<input type="radio"/> revert delete

Figure 4: Each modification of a content creates a new independent version

Hierarchical groups

Often the problem is not the availability of information, but to be able to quickly identify relevant and reliable material amongst large amounts of data ([2]). End users must therefore be able to self organise themselves around common topics of interest, where the information is more pertinent. This means to be able to autonomously create groups, better if hierarchically organised (Figure 5).

Groups should be a whole “dimension” of the platform, where each type of content and activity used in the platform should take groups into account. So each group could have its own forum, its own documents, its own agenda, etc.

In our implementation, articles can refer to a specific group, as do seminars or webcasting events.

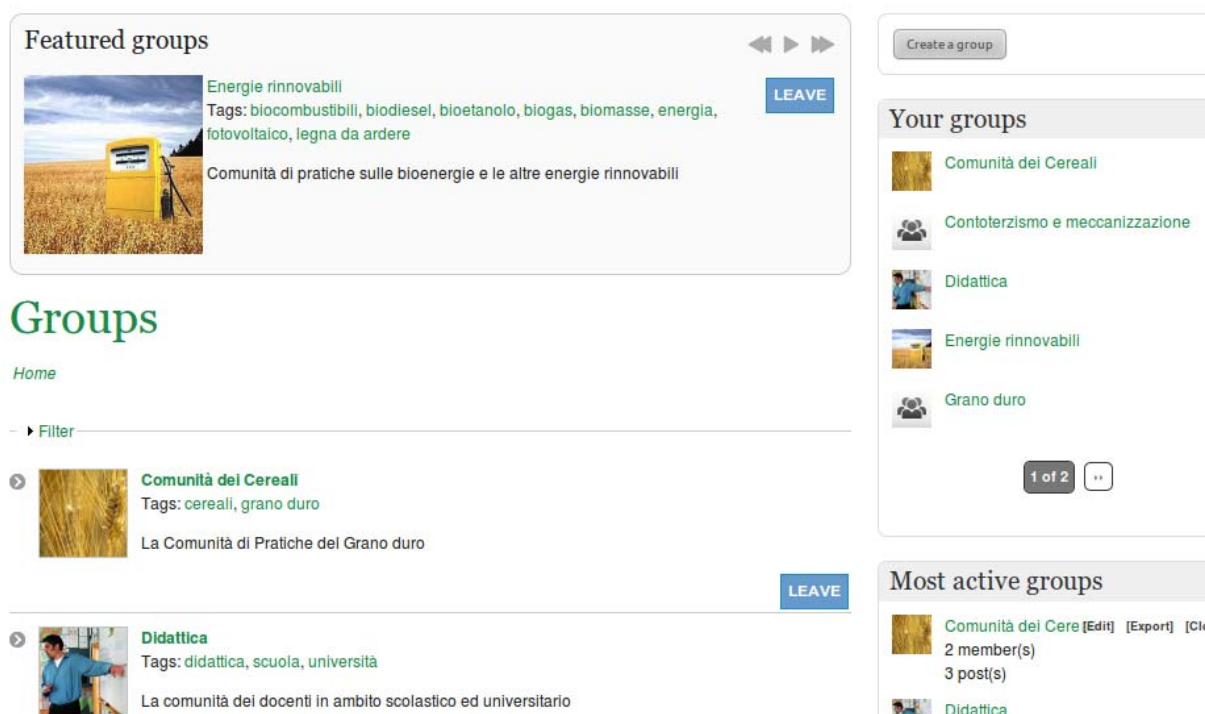


Figure 5: Groups page

Notifications

The importance of filtering the relevant information is also the basis of selective notification, where users choose what and how to be notified about.

Referring on “what” to be notified, we can distinguish in (a) content-based notification, when e.g. users choose a single topic to be notified; (b) a context based notification, when the choice involve a group or a particular topic or (c) a individual member notification, when it involves a single member to be notified about his/her activity. Figure 6 shows an implementation of this functionality, where the user is presented with a list of notification options.

The notification mode can also be chosen by the users among the available channels offered by the platform, varying from traditional email to on-screen pop-ups or mobile SMS.



Figure 6: User's choice on subscription level

Credits

The choice made by the users about the information to filter is influenced not only by the contents of the information itself, but also by its properties, like its age or the trustworthiness of its source.

The importance of trust in learning has been enlighten in ([5]). If in formal education it is a long time that ways to recognise trust are in place (e.g. the journal “impact factor” in the academic sector) a popular criticism of bottom-up learning approaches is that they don't allow for proper reputation meccanismo. Indeed, most social platform include a way to represent reputation. The trust could be summarily indicated with a pointing system, with the most modern ICT platform offering a flexible method to define the algebra arising to such pointing in order to adapt to the context, for example the level of participation in the community could depend on the number of content or comment entries made, the expertise could be measured by the number of “thanks” received, and so on. Figure 7 shows a subset of options that lead to the algebraic calculation of the user level of participation in our implementation.

▼ Facebook-style Statuses

Userpoints for changing one's own status:

Userpoints for posting a status message to another entity:

Maximum number of Userpoints from posting statuses per day:

Set to zero for no limit. Note that the actual number of points awarded per day could be higher than this if this is

► Facebook-style Statuses Comments

Go to [Userpoints Badges Settings](#) to edit userpoint badges

▼ Points for posting nodes

☒ Take away points on node delete

Points for posting a Blog entry:

Points for posting a Poll:

Points for posting a Discussion:

Points for posting a Document:

Figure 7: A flexible pointing sytem

Relationships

Last but not least, at the core of the functionalities of a social network there are the interpersonal relationships. While most of the interaction can be mediated by the content, it is useful to provide ways of direct communication between users. With a flexible relationship manager (Figure 8) the community manager can design the platform for the characteristics of the community. Users can hence select the other users they are related and follow their activity, or at the opposite decide which type of actions let the own followers see from them.

Relationships

[Home](#) > [Administer](#) > [User management](#)

[List](#) [Add type](#) [Settings](#)

Relationship Types					
Name	Plural	Type	Requires Approval	Expiration	Operations
Friend	Friends	mutual	yes	Never	edit delete
Regional agronomist	agronomists	one way	yes	Never	edit delete
Customer	Customers	reciprocal	yes	Never	edit delete
Supplier	Suppliers	reciprocal	yes	Never	edit delete

Figure 8: Flexible relationships manager

Concluding remarks

Through this paper we analysed the learning needs in rural areas. These areas are characterised, almost by definition, by the presence of sparse communities.

On one side remoteness and the interrelated small size of businesses means many disadvantages in a knowledge-based society: self-responsibility for the own's learning but at the same time impossibility to carry out in-house research and development (R&D) activities; difficulties in physical networking activities; distance from centers of excellence.

On the other side however, rural areas are characterised by a strong cultural identity and a high willingness to collaborate.

Furthermore, at least in the developed countries, the main needs concern a provision of continuous education rather than primary education.

In this context, an approach that integrate both the top-down formal education with a bottom-up informal learning in a so-called hourglass approach seems more appropriate, where "traditional" e-learning course provision acts as a stimulus for the "social learning" facilitation.

We presented in section 4 an implementation of a web platform that allows to integrate the two approaches: the platform allows users to be considered as nodes of a networked community where the type of relation depends of the context. This will enable the creation of both e-learning courses where the relations are typically polarised over a teacher-students dualism and learning communities where instead the relations between users are more of equal footing.

The platform must be flexible enough to be designed around the specific characteristics of the targeted community and the project goals, and a number of key features, without which the platform can not operate the role of social networking in an education context, has been discussed.

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