A European research agenda for lifelong learning

Conference or Workshop Item

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Abstract
It is a generally accepted truth that without a proper educational system no country will prosper, nor will its inhabitants. With the arrival of the post-industrial society, in Europe and elsewhere, it has become increasingly clear that people should continue learning over their entire life-spans lest they or their society suffer the dire consequences. But what does this future lifelong learning society exactly look like? And how then should education prepare for it? What should people learn and how should they do so? How can we afford to pay for all this, what are the socio-economic constraints of the move towards a lifelong-learning society? And, of course, what role can and should the educational establishment of schools and universities play? This are questions that demand serious research efforts, which is what this paper argues for.

Keywords
lifelong learning; knowledge society; research agenda; distance learning; Europe

1 Introduction

Learning is the key to prosperity, for nations and individuals alike. Research on education shows that countries with a well-educated working population produce more goods and services; also, an increase by one year of the educational level of the working population leads to a growth in production of about 8% (Card 1999, Grossman 2005, Topel 1999). A recent OECD report shows that 'relatively small improvements in the skills of a nation's labour force, can have very large impacts on future well-being' (OECD 2010, p. 6). Income benefits at the individual level are also substantial; the same one-year increase leads to an income growth of 5-15% over the total career.

Apart from these straightforward economic benefits more education brings, health, a sense of citizenship and democratic values also benefit from it (Hammond 2002). In the second half of the 20th century, education and intelligence had a strong positive impact on democracy, rule of law and political liberty, independent of wealth (GDP) and chosen country sample (Rindermann 2008). Schuller and Desjardins (2007) discern three kinds of effects of increased levels of education: *direct effects*, relating to, for example, a raise

in income; *indirect effects*, relating to the effects on a person's environment; *cumulative effects*, relating to chains of effects such as higher education leading to better information, to safer behaviour, and ultimately to better health.

In the first instance, these effects are the outcomes of the education of children and adolescents (mandatory or initial education). However, lifelong learning accumulates the same benefits. It raises the learners' *human capital* by empowering them; it enlarges their *social capital* by allowing them to network in groups, virtually or face-to-face; it strengthens their *identity capital*, by enabling them to understand their own identity, the identity of others and the perception others have of them.

This plenitude of beneficial effects is the reason that lifelong learning has been put on the political agenda. As early as the 1970s, UNESCO already emphasised the importance of lifelong learning as a means of generating cultural and personal growth (Faure 1972). More recently and at a European level, the launch of the Lisbon strategy in 2000 has been significant. Among other things, it put education and training centre stage in its aim of achieving 'a Europe of knowledge'. In the same year, the European Commission Staff published the *Memorandum on Lifelong Learning* (Commission of the European Communities 2000), which focussed on lifelong learning in particular. Since then, many initiatives have been taken at the European level, culminating perhaps in the establishment of a single umbrella for education and training, which quite significantly has been called *the Lifelong Learning Programme*. This programme replaces a variety of programmes that all ended in 2006; it has a budget of nearly €7 billion for the years 2007 to 2013. These and other efforts have led to progress in the establishment of lifelong learning. However, within the EU, large differences still exist. Although most EU countries show an increase in participation in lifelong learning from 7.4% in 2000, to 9.6% in 2006, the benchmark for 2010 is set at 12.5% (Commission of the European Communities 2006). At present, the Nordic countries, the UK and the Netherlands show the highest participation.

Interestingly, the data available from Eastern European EU countries (e.g. Bulgaria) show participation patterns that are very different from Western-European EU countries. In Bulgaria, where the total participation rate in lifelong learning is some 20%, women participate to a slightly higher degree than men, and people in rural areas participate 25% more than people living in cities and towns. Also, participation in the age group 15-24 doubles that of other age groups (Daskalova 2003).

The political level, then, seems intent to foster lifelong learning. Political initiatives to establish and improve lifelong learning, however, can profit tremendously from a solid

research-based underpinning. Indeed, the political efforts to foster lifelong learning have been predated by various research efforts on lifelong learning, too many to list them all. However, significantly, recently a critical evaluation from a research perspective was made of the 2000 EU memorandum (Borg & Mayo 2006). Precisely because of the importance of lifelong learning, the present paper intends to muster arguments for putting lifelong learning research firmly on several research agendas. The authors all have backgrounds in open or distance learning. They feel that their and cognate institutions (for instance the membership of the European Association for Distance Teaching Universities, EADTU), because of their specific experience and expertise, are in an excellent position to provide the much needed boost to research in lifelong learning. However, that will not suffice. Only by combining and aligning the various research activities already carried out by their institutes and other ones not steeped in distance education one can hope to contribute enough to lifelong learning research to satisfy the current societal needs for a better understanding; more importantly, only that way also the various lifelong learning policy targets that the members' national governments and the European Commission have set, may be attained.

The paper is organised as follows. First an overview is given of what Europe sees as the future of lifelong learning. The notion of the 'knowledge society' plays a large part in the explication of these expectations (Section 2). The next Section (3) discusses in detail how education could prepare the European citizen for its foreseen future role. This is done by first focusing on competences - conceptualised as complex, knowledge-rich skills. They play a large part in realising a future in which people learn throughout their lives, both as individuals and at the level of society at large. Knowing *what* people should learn, whether as an individual or as a society, does not say much about *how* they should learn. This is the domain of pedagogy, which is also addressed. It goes without saying that lifelong learners cannot be treated the same way as 'initial' learners (children and adolescents). But how differently should they be treated? This question will also be viewed from the perspective of the benefits that learning in communities may have, for learning itself and for the emergence of communities of professionals. Having established from a learning theoretical perspective how Europe's road to a lifelong learning society could be paved, the question arises what the socio-economic realities of such a road are. This is the subject of Section 4. Universities and schools have long since played the role of knowledge institutes *par excellence*, but can they retain this role? In what ways should they change to do so, and can they? For instance, can they adopt the attitude and the business models that are needed in a demand-driven universe as opposed to the supply-driven environment they are used to work in? Much as this seems a list of threats to the educational establishment, it also offers many opportunities. These are discussed briefly.

The concluding section (Section 5) summarises our findings and discusses the items that need to be put on a research agenda for lifelong learning in Europe.

2 The future of lifelong learning in the European knowledge society

How will the development of the knowledge society influence lifelong learning and what are the implications for the formation of human capital, social capital and identity capital? The knowledge society is characterised by the acceleration of knowledge production and the development of knowledge-based communities on the one side and the intensity of innovation on the other (David & Forey 2003). The idea is that economic value is generated more by knowledge than by trade or industrial activity. This happens by a growth in highly skilled service industries - and a shift in what makes manufactured goods valuable. Obviously these changes do not form a sharp discontinuity in history, but represent a transformation into a new phase. In this emerging phase, ICT plays an important role, both the powerful one of facilitating learning and networking and the even more powerful one of being a provider of information, definite and indefinite.

The implications for participation in lifelong learning can be analysed at the microscopic level of the individual, by paying attention to characteristics such as motivation, perception, and intention. Into these, one then integrates determinants of the immediate context, such as family, social network, etc. in order to determine barriers or propensities to participate in lifelong learning. This type of analyses show that participation varies according to age, level of education, labour market position and gender (McGivney, 2001). At the individual level, research should also look ahead and focus on the interest and motivation of young people in learning, as they are the workforce of the future. Important questions are: What are the determinants of their future participation in lifelong learning? How is their motivation shaped? Do these learners prefer using the web to learn? Do they prefer non-formal(informal) learning? What is the optimal mix of formal and non-formal learning opportunities? What is the effect of social inclusion on their motivation to learn? How important is digital ability?

At the European level, analysis of participation in lifelong learning can also start from a macroscopic, societal viewpoint, by stressing demographic, technological, economic and cultural factors. In this respect the framework proposed by Groenez et al. (2007), who describe participation in lifelong learning in socio-political terms, is clarifying. Their framework contrasts liberal with co-ordinated market economies. It exhibits system

characteristics that empirically prove to be relevant to analysing social security and labour market policy as well as inequalities in participation in lifelong learning. The typology is related to the typology of welfare states presented by EspingAnderson (1999). Liberal and co-ordinated market economies differ in aspects that are crucial both for the description of the relative and absolute participation in lifelong learning. The most important of these aspects are the competence profile (general versus industry or company specific), the level and quality of the initial (vocational) education and training, the speed of innovation, industrial relations (e.g. employment protection), roles and responsibilities for training and learning from the perspective of employability.

The intensity and acceleration of knowledge production have repercussions on the way learning is related to working. Unsurprisingly, it is major upcoming issue in labour organisations how knowledge can be continuously renewed and updated. However, the concomitant shift in responsibility for this renewal from employer to employee is no smaller concern. The contemporary labour market requires that employees are keen to maintain their employability by investing in training and learning. It is therefore essential that employees develop competences that enable them to design their own learning trajectories and thus safeguard and enhance their employability. Renewal and updating of knowledge takes place both through formal learning and through non-formal (informal) learning.

In this context, it is worthwhile to investigate how Europe may evolve over the short term, at the European level, but also at national and individual levels. On the (trans) national level research needs to analyse the differences in the development of participation between countries, linked to both European policy and the differences in national policies regarding lifelong learning. Further, research on the effects of demographic and technological trends on participation should be updated (Cross 1981). In view of these trends at the European level, a research agenda for lifelong learning should include both socio-economic and educational themes.

Examination of the demand for competences and the validation of acquired competences
Studies on the topic of future competences reveal that a knowledge society demands specific skills and abilities of its members, such as: communication skills, team working and learning skills, generic learning abilities, knowing what one has to learn, knowing what one does not know, and knowing where to find relevant information. Because of the increasing amount and the changing nature of technical knowledge, the need to keep up with change. The need to understand and anticipate change underpin the importance of lifelong learning. In addition to this, members of a knowledge society need to possess certain ‘digital’ skills. Digital competence is not only the skill to use ICT tools, but also

the ability to search for, find, manage and determine/evaluate the merits (i.e. value, reliability, importance) of the information found (Brand-Gruwel et al. 2005; Pirolli 2007). Hence, knowledge, skills and a reflective attitude are seen as central competences to be developed (Puny 2007). These are not new competences but they are more salient now than ever before. The question of how to map efficiently the demand for competences into the supply of competences should therefore be a vital, short-term theme of research and policy.

Meeting the needs of the knowledge society by new pedagogical concepts
Today, teaching in most educational institutions still happens in a rather hierarchical or pyramidal way. At the same time information and communication technologies facilitate the creation of networks and the sharing and creation of knowledge within these networks. Networks are disruptive, because they confuse and upset hierarchies - especially in schools. Information no longer flows from one teacher to all, but from all to all. Teaching in a networked society has implications for education: for the way teachers practice their profession, for the tools that are used in schools, for the information that is available, for the communication between teachers and students (*cf*. Koper & Sloep 2002; Sloep & Jochems 2007). These developments in the educational field and the developments in the field of competences that we pointed at earlier, stress the need for new pedagogical concepts to undergird lifelong learning. Key concepts will be personalisation and social learning.

The next section will delve more deeply in these two important, intimately related topics and derive a number of pertinent research questions associated with them.

3 The role of competences, certification, accreditation, and pedagogy

Already in 1999, the Bureau International du Travail pointed out that, in today's globalised market, the level of competence and the quality of the work force will be decisive determinants of prosperity and well-being (Boterf 2005). Indeed, Boterf goes one step further to emphasise that individuals, when confronted with the analysis of their own competences, will understand that their initial training does no longer suffice to showcase their competences. Eventually, they will feel a need for self appreciation and effective lifelong learning. Most working professionals already know that they will have to adapt themselves to a variety of different job requirements throughout their careers. This calls for a review of the concept of employability, and the acknowledgement that those who can best display their adaptability and lifelong learning competences, are likely to be

most successful. The concept of employability has evolved significantly in the last two decades, here we will focus just on two of its aspects. Firstly, what is required from any employee is often more than just being able to replicate his or her own task. Individual employees are expected to show initiative, independence, and critical thinking skills to be able to intervene and make or suggest changes whenever necessary, while always bearing in mind the final product or objective. To be competent is to always be able to learn in order to be able to adapt and respond to new situations. Secondly, and in line with this new state of affairs that we have described, in 2003 the OECD DeSeCo (*Development and Selecting of Competences*) project identified three fundamental areas for the development of competences (Rychen & Salganik 2003, p. 5):

> First, individuals need to be able to use a wide range of tools for interacting effectively with the environment: both physical ones such as information technology and socio-cultural ones such as the use of language. They need to understand such tools well enough to adapt them for their own purposes – to use tools interactively. Second, in an increasingly interdependent world, individuals need to be able to engage with others, and since they will encounter people from a range of backgrounds, it is important that they are able to interact in heterogeneous groups. Third, individuals need to be able to take responsibility for managing their own lives, situate their lives in the broader social context and act autonomously.

However, there are no competences without knowledge (Perrenoud 1999). Competences are anchored in notions and knowledge from a diverse set of backgrounds (mathematics, physics, history, economy, geography …). Conversely, familiarity with such notions and knowledge does not warrant competence. The notion of competence is conceptualised as an action verb, it directs us to situations in which we are faced with the need to take action, make decisions, and solve problems.

Classical schooling has always wanted its knowledge to be useful. However, this vision has often been surpassed by a logic of simple addition of different areas of knowledge. The problem with such an approach is that it often doesn't leave enough time to contextualise and put into use, in real-life situations, all of the notions that are studied. It is fundamental to recognise that competence-based education requires us to create a learning setting in which the transfer of knowledge, supported by a reflective practice, can occur in situations that allow individuals to mobilise their knowledge, combine it, and go beyond it.

Competences refer to skills, abilities and attitudes; they are based on domain-specific knowledge that is to be applied in present and, more importantly, in future practice. In terms of the demand-driven view, the need for which we have identified in the above, what and how one has to learn should result from requirements of practice, not from

tradition or authoritative principles. Nevertheless, one must not misconstrue competences as mere gaps of knowledge and skills to be filled just in time. On the contrary, the concern of competence-based learning addresses profound dispositions of individuals, which enable them to act proficiently in future and unknown situations. This concern is often explicated in terms of transfer from learning to practice, in terms of situated learning and in terms of tacit knowing (Le Deist & Winterton 2005, pp. 29-31).

3.1 The demand-driven view on competence profiles

Definitions of competences delineate required competence profiles: for a specific job, for an occupation or a profession, and for a programme of formal education (Van der Klink, Boon & Schlusmans 2007, p. 226). They may also describe the intended outcome of a programme in formal education. Competence profiles (Boterf 2005) required for a specific job are an important tool in human resource management. They determine requirements needed to fulfil the tasks connected to the work one has to do. One may formulate them for a specific position in an organisation or may issue them for a category of jobs in an enterprise. Formal qualifications for an occupation or a profession are subject to governmental or corporative regulation. In some areas, educational institutions adjust their programmes of study to sets of qualification or competences. In other areas, educational institutions define sets of requirements for occupations or professions by their curriculum. Undoubtedly, though, a large part of the skills, abilities, attitudes and knowledge that are required for an occupation or a profession, are acquired while practising, not in formal learning.

Educational institutions use competence profiles to regulate their entrance and completion requirements; they translate them in curricula and assessment standards; they affect the design of learning experiences; they inform exams (Van der Klink, Boon & Schlusmans 2007, p. 227). Required competence profiles are closely connected to such institutions as professional associations, standardisation boards and governmental authorities (Beck, Brater, & Daheim, 1980). We can define their function as standardisation of expectations, as held both by employers and employees. Instead of having to negotiate and assess what is needed for each single task assigned to a person in a specific context at a certain time, one may simple expect members of an occupation or a profession to possess specific competences. Likewise, employees and professionals can expect particular wages and fees, careers, status etc. associated with their acquired competence profiles. Hence, standardised, required competence profiles fulfil an important regulatory role in society, by reducing complexity in everyday transactions between professionals and clients, employers and employees, craftspeople and consumers. This is why they are important for social life and economy.

The formation of Europe as a common education area and a common labour market, together with the shift from relying on formally certified and formerly acquired qualifications to performance-oriented competences generates issues of strategic importance for research and development of lifelong learning. These relate to the proper description of competence profiles and to our dealing with them as a society. Thus:

- How are required competence profiles best described, structured and developed, in order to meet the needs of employers, occupational and professional bodies and educational institutions in the face of changing requirements in a fast developing economy and in the face of lifelong learning? How can meta-models be devised, both domain specific and domain independent, that serve as competence maps on a superordinate level?
- How will competence profiles required by companies, by occupational and professional bodies and by educational institutions connect in the future, in order to align requirements of work, interests of social relevant groups and findings from the education system? How can negotiations on required competence profiles be supported both technically and organisationally? How will individuals, e.g. working in newly emerging areas of occupation and profession, contribute to these negotiations, if not by occupational and professional bodies?

Recently, the European Parliament and the Council of the European Union (European Commission 2008) summed up various developments in the European Union to a recommendation on the establishment of the European Qualifications Framework for lifelong learning. In order to further the integration of the European labour market as well as to promote lifelong learning and equal opportunities, the European Qualifications Framework is intended to serve as a reference tool, e.g. for referencing all new qualification certificates to the appropriate European Qualifications Framework level. A list of recent developments in the European Union is recorded as a foundation of this recommendation. To name the most prominent ones:

- Transparency of qualifications (part of the Lisbon Strategy 2000)
- A framework for the recognition of qualifications, building on the achievements of the Bologna process and promoting similar action in the area of vocational training (part of the Council Resolution on lifelong learning in 2002)
- A single Community framework for the transparency of qualifications and competences (*Europass*) (a recommendation of the European Parliament from 2006)
- Key competences for lifelong learning (a recommendation of the Council of the European Union from 2006).

The intended establishment of the European Qualifications Framework for lifelong learning elevates the development of required competence profiles and competence

maps to a European level. It is quite clear that these developments raise questions and needs for both research and development that go far beyond traditional ways of aligning requirements from work, individual needs and foundations of education. This happens since national traditions of developing and devising required competence profiles and competence maps for occupations and professions differ significantly between member states.

A good example of successfully bridging such national differences has been the creation of a European Committee of Accreditation of Haematology (ECAH). It has enabled the establishment and accreditation of a system of speciality training and continuing education in haematology across EU countries. Crucially, the project developed a competence profile for the area of haematology. In 2008 it was adopted by the H-Net project within the Leonardo da Vinci programme as a basis for improving and harmonising specialist training in haematology at the pan-European level.

3.2 Profiling Acquired Competences: The supply-driven approach

Lifelong learning is essentially and closely related to individual persons. The individual's learning history is the point of departure for the description of individual biographies of education and learning. This is reflected in efforts to arrive at personal portfolios (Klenowski, Askew & Carnell, 2006), particularly digital (e-portfolio). There is the need for acknowledging one's competences far beyond an initial training or an undergraduate study by continuous learning during the whole life span. This is the more true as biographies of education and learning will not always follow traditional paths of required competence profiles for a job, for an occupation or for a profession. Biographies of qualifications and competences are personal, and lifelong learning amplifies acquired competence profiles continuously, indeed even facilitates discontinuities in the development of a person's competence profile. This is inevitable, but also beneficial as it contributes to the flexibility of the work force as a whole.

Competence profiles also fulfil different functions, varying from a proof of employability to the very personal expressions of one's self-identity and goal setting. In the former case, profiles of required competences are compared with the profile of acquired competences of an applicant or an employee. However, where occupations and professions lose ground in the foundation of personal identity - e.g. in newly emerging areas of work - personal, acquired competence profiles become more prominent for the definition of self in economy and society. From the perspective of lifelong learning, individuals have to integrate both aspects: on the one hand, standardised expectations captured in job profiles, career plans and regulations for occupations and professions; on the other hand, the general and demanding expectation of reinventing oneself repeatedly

during one's lifetime by continuously learning and educating oneself. Personal, acquired competence profiles serve as a tool to improve personalised learning and education. Mapping personal competence profiles into required competence profiles identifies individual learning gaps and allows goal setting, including two aspects: external orientation at standardised demands and individual decision on personal plans of one's own development. If these plans are successful, they will lead to self-determined learning and education (Brown, 2002). This never is a simple process of filling in the 'competence blanks', though. Competence-based learning has to instil individuals with the disposition to act proficiently, also in future and unknown situations. As argued, this demands situated learning and the elicitation of tacit knowing (Lave & Wenger, 1990; Le Deist & Winterton 2005; Van Merriënboer & Brand-Gruwel 2005).

With personal competence profiles, lifelong learners can describe the skills, abilities and attitudes, based on specific knowledge, they already possess as well as those they would want to acquire. This sense of self-regulated and self-determined, continuing education corresponds to professional careers rather than to the work life of skilled workers and persons steeped in some occupation. Nevertheless, by continuously enlarging, developing and re-orientating their personal competence profiles in a world of lifelong learning, more people are going to make their way along the model of a professional career (Edwards, 1997, pp. 148 ff).

The individual approach of personal and acquired competence profiles generates several issues of research and development for life-long learning. They concern:

- How can one map previously acquired skills, abilities, attitudes and knowledge into standardised profiles of required competences as well as into more generalised competence maps? Who is going to do that, if the assessment and testing which educational institutions carry out based on requirement sets and positioned at the end of formal education, no longer connect individual competences to standardised requirements?
- How is certification of antecedent competences and prior knowledge going to be organised? Specifically, how can competences acquired by informal as well as by incidental (informal) learning be certified? Who is going to certify single personal competences and personal competence profiles?
- How will the alignment of a certification authority, such as an educational institution, to standards in requirement sets and competence maps be organised and regulated? Are contemporary ways and tools of accreditation efficient and sufficient? Do they have to be further developed, or should former ways of negotiation on standards for required competence profiles and competence maps

be rediscovered, including the inclusion of companies, labour relations, corporative bodies, parliamentary work and participation of citizens?

3.3 The role of pedagogy in personalisation

The opportunities for flexible course delivery the electronic media have brought forward are tremendous. The asynchronicity permitted by online social media such as email and fora as well as by integrated systems such as Learning Management Systems tremendously increased the scope for flexibility in study routines. It also helped meet the growing demand for part time study as well as for continuous professional development and lifelong learning (Macdonald, 2004). Moreover, electronic media made available a variety of ways to present and structure learning opportunities that had never been possible before. Learners may now not only access and combine information in new ways, but also keep in touch on a more regular basis, thus reducing the feelings of isolation and promoting the emergence of new "learning communities" (Collis 1998; Berlanga et al 2008).

Thinking in terms of competences and competence profiles necessitates personalised learning plans (Van der Klink, Boon & Schlusmans 2007, p. 230f). However, the realisation of personalised learning is determined by various facets of learning, grounded in the pedagogically common emphasis on practice and process. Also, as already suggested, translating the need for personalised learning into the identification of skills or competence gaps that have to be filled 'just-in-time' readily leads to bad pedagogy. Although there are no principled objections to offering small, highly targeted learning 'objects' - micro-learning - they should be underpinned by sound pedagogical principles, as for instance found in situated learning (Lave & Wenger, 1990; Van Merriënboer & Brand-Gruwel 2005).

When thinking about the acquisition of competences for personalised learning, the following caveats should be kept in mind:

- Personalised learning starts from a *logistic flexibility*, which is traditionally a primary attribute of distance education and at present addressed by various forms of technology-enhanced learning. Hence, learning opportunities should fit the learner's specific circumstances, i.e. his or her requirements with respect to time, place and pace of studies.
- In order to be effective and efficient, personalised learning involves complex requests of instructional design in terms of *didactic flexibility*. Learning opportunities should fit individual learning styles, which can for example be described by dichotomies of learning solitary or in groups, of emphasising the practical or the theoretical, of fast or slow pacing, etc. Especially meta-cognitive

abilities of individual learners have to be taken into account, which enable levels of guidance from tutorial monitoring to self-directed learning.

- There is little doubt that information and communication technology furthers learning independent of time, place and pace of studies (logistic flexibility). But notably, information and communication technologies also allow learning dependent on and connected to needs that emerge from work or daily practice, including social contexts (*content* or *context flexibility*). Hence, the integration of the contexts of work, home and learning are at the midst of personalised learning.

By acknowledging these and other basic conditions of personalisation in learning, it becomes clear that the way from personal competence profiles or personal competence maps to personalised learning plans and then finally to personalised learning is neither straightforward nor easily accomplished. Taking the already argued antagonisms into account - i.e. between standardised and individual competence profiles, between the individual and the social, between formal, non-formal an informal (incidental) learning - several questions for the pedagogy of acquiring competences through personalised learning arise:

- How are personal competence development plans best described, structured and approved in order to meet the needs of learners in the face of changing requirements in a fast developing economy and in order to further self-determination? How can a learner be supported in structuring his or her personal competence development plans? Who is going to provide these services of learning counselling?
- How do competence maps relate to learning paths, i.e. what results for instructional design can be drawn from findings on the structure of competence? How do levels of proficiency and their connection to dimensions of single competences in a specific domain determine the optimal way for learners to acquire skills, abilities, attitudes and knowledge? How can prescriptive models of competences for designing learning opportunities be devised from descriptive models of tested and assessed competences?
- How can a single learner with highly personalised learning opportunities relate to other learners and a wider social environment, since social constructivist approaches towards learning emphasise the importance of the group of learners, e.g. for learning in communities of inquiry or communities of practice? How can collaborative learning be organised without impairing individual learning needs? Is this a dichotomy, or is there a systematic connection between personalised and social learning?
- What kinds of educational resources are beneficial for personalised learning? How can they be retrieved and accessed, e.g. in terms of universal accessibility,

aspiring digital inclusion and reducing the digital divide? Is this a question of economy, or what other models of providing educational resources and services are adequate for a democratic society, e.g. furthering and using Open Educational Resources? Where several providers of learning opportunities are present, how can learners and learning counsellors decide on quality and price (value for money)?

- Will individual competence development paths always have to be certified? Who is going to certify individual learning paths, which merge non-formal and informal learning with formal education? How can individual achievements be assessed, lacking a social reference point usually provided by assessing a group of learners, especially for acquired competence profiles that are unique and thus incomparable? How will certifying bodies be accredited?

3.4 The role of communities and networks

In the previous subsections, personalised learning and pedagogies that fit this kind of learning have been discussed. Much as personalisation is a *conditio sine qua non* for lifelong learning, it does not suffice to create a sufficiently rich learning environment for the lifelong learner. Fellow learners constitute an important part of that environment. Even if learning needs and activities differ from person to person, this does not imply that one can do away with the role of a community of learners. After all, there is much evidence that community learning is superior to individual learning (cf. Chapman, Ramondt & Smiley 2005). Even for that reason alone, lifelong learners should be facilitated to develop communities.

To suit the needs of the lifelong learner, such communities should be quite open, with a minimum of constraints as to who participates and what business is conducted and a maximum of flexibility as to the tools used and not used. Indeed, although in the first instance such communities may be set up to foster learning - that is as *communities of learning* - it would be wise to keep them alive even when their inhabitants have long since stopped learning and have become practitioners of their newly acquired competences, skills and knowledge. This way, such communities will acquire the characteristics of an admittedly loosely connected *community of practice*. The term network is much more apt to describe such self-organising social systems (Wiley & Edwards 2002), as in all likelihood one will be dealing with several, partly overlapping, communities that are in constant flux and exhibit to a larger or smaller extent the characteristics of a community of learning or a community of practice. *Learning networks*, then, are set up to foster learning (Koper & Sloep 2002; Sloep 2009; Sloep & Kester 2009), *knowledge networks* to facilitate the exchange of knowledge (Bogenrieder

& Nooteboom 2004). Ideally, they morph into each continuously and rapidly, depending on the specific needs of the inhabitants.

Although such networks should grow autonomously, through self-organisation, their structure may be more conducive or less conducive to their growth and persistence. Guidelines for how best to set them up are therefore needed (Andriessen 2006; Berlanga et al. 2007; Sloep 2009). Second, they should be stocked with a variety of tools - learner support services - that, by facilitating the network inhabitants in their transactions, also increase network viability (Sloep et al. 2007). Such services can be based on the network members' collective behaviour which then is used as a basis for recommendations, much as online bookstores reveal what books the other customers bought who also ordered the book you just bought. (Hummel et al. 2005). Alternatively, support services may be based on advice voiced by fellow learners (peers), hand-picked via data-mining, and/or via matching technologies (Van Rosmalen et al. 2008). The latter kind may as an interesting corollary effect strengthen the social cohesion of the network, by extending the life of the small, fleeting communities (ad-hoc transient communities) that have been set up to link up advice-asker and advice-providers (Berlanga 2008; Sloep 2007).

Learning environments, however, are more than just points of access to learning opportunities and to a learning network. As learning environments increasingly take the form of *virtual* learning environments (VLEs), shaped by information and communities that offer asynchronous and synchronous access to 'things' and people, they should integrate seamlessly and unobtrusively with one's 'ordinary' computing environment. The days of the monolithic VLE that forces a student to abandon all (s)he has grown accustomed to, perhaps even fond of, are over, if not soon in traditional education then certainly in personalised, lifelong learning. This means that a new approach to constructing VLEs needs to be established. This is a tall order since desktop computing environments differ greatly. Under the heading of the personal learning environment (PLE), discussions on this issue have been conducted, the use of widgets that conform to open standards has been identified as a feasible technology (Wilson 2007). Whatever the specific technology used at the client's desktop, various kinds of centralised or semi-centralised (peer-to-peer) systems need to be devised that maintain a variety of user and usage records, that serve up content, etc. The widgets will only be the points of access to these systems.

4 New business models for new developments

The previous section discussed how education could prepare the European citizen for his or her future role as a lifelong learner in a knowledge society and what research questions need to be addressed to let that vision become true. We looked at what needs to be investigated in order that such a competence-based approach could bring this future nearer, and how pedagogies need to be tuned to it. This section focuses on economic and institutional consequences of preparing oneself for such a future.

4.1 Lifelong learning, a new business field

Much of our current expertise, particularly in universities and other higher and further education institutions, has been concerned with a product-driven *push model*. Promoting a demand-orientated *pull model*, thus, requires a rethinking of much of our conventional wisdom. This pertains not only to our traditional educational assumptions, but also to the organisation of the education needed (which might well transgress the boundaries of traditional educational institutions) and to the business models that underpin their economic viability. Important questions that need answers are:

- What roles should teachers and tutors play?
- How are educational resources going to be developed and delivered?
- What role, if any, is there for user-generated content and open educational resources?
- How does the role of traditional universities and other educational providers change?
- Do professional organisations have a part to play?
- And most important, what is the role of the student, the lifelong learner, who represents, at the same time, both the product and the customer of the educational system?

As management theorist Peter Drucker famously observed in 1954: 'it is the customer who determines what a business is' (Drucker 1954). To put this another way, a business model is only viable if there are enough customers who want the goods and services that it covers.

Whatever the answers may be to the rather specific questions just posed, the following general trends also apply to the market of lifelong learning:

- Customers are becoming better informed about possible alternatives.
- They are more sensitive to cost and value.
- They are more willing to share their insights and opinions with their peers.

These trends have a huge bearing on which competitive strategies will work. Examples include differentiation, cost leadership and focus strategies. Organisations outside education have found it hard to succeed if they try simultaneously for both differentiation

and cost leadership. But this could change, making innovations such as mass customisation more feasible. Overall, business conditions are changing fast, and one's existing business models may not work well in the future.

What we see today is mainly a mix of traditional mass-market business models (business-to-consumer and business-to-business), internet equivalents (e.g. eBay, Amazon), and bespoke business models (through shops and the internet). The supply chains are typically owned by or driven by the largest organisations. The associated business ecosystems have a lot of scope for disintermediation (buying directly from providers, rather than through a chain of wholesalers, value-added resellers and retailers).

4.2 New challenges and opportunities

What lessons could those observations have? Prospectively, we may see radical changes in education markets, that follow trends applying to the whole economy. Examples include:

- Peer-to-peer knowledge services: people can alternate between consuming (a student role), producing (a tutor role) and prosuming (the role of a knowledgeable student who listens well and can also do a good job as a tutor). Peer-to-peer learners can dictate what they can admit to being interested in, what they want to know about it, and who they can ask what there is to know about it.
- Customer-driven innovation: the whole community can propose features to add to a product or service, and ways to deliver those features fast and at low cost.
- Many schemes emerge in which products or services are free. To illustrate, lenders might require potential borrowers to take free courses on how to establish a household budget and keep to it, before they sign up for a loan.

Competence-based learning is becoming en vogue. Similarly, 'being flexible' and 'putting the learner centre stage' are attitudes advocated in policy documents. To what extent traditional educational institutions will be able to operate simultaneously according to two almost orthogonal paradigms, remains to be seen. The innovation literature is not optimistic about the powers of established institutions to absorb disrupting innovations (Christensen 1997). Whatever the case may be, the question remains valid of how one can put in place the innovations needed to establish, at a sufficiently large scale, a competence-driven, personalised, pull model for professional, lifelong learning (Naeve 2005; Naeve et al. 2008).

This is the predicament established institutions of education have to face. When turning from distributing knowledge and certifying qualifications to furthering competence-based learning, educational institutions have to act on various demands from society and economy, far more than in traditional ways of legitimating their curriculum. In other words: The 'pull' in the model does not only originate from individual persons as learners targeted in a world of lifelong learners – various stakeholders address their demands on educational institutions in terms of competences (cf. Section 3). This challenges the prominent role of educational institutions in defining what and how one ought to learn.

How do educational institutions react to this? How can educational institutions perform actively in the negotiations of requirements sets and competence maps, e.g. taking over a role as mediators of different interests as well as advocates for single learners? On the one hand, there is an obvious need for regulations on required competence profiles. On the other hand, antecedently acquired competence profiles are highly individual and should be devised flexibly and in learner-centred fashion. Nevertheless, flexible and learner-centred learning is neither arbitrary nor random. As argued in Section 3, learners will use job profiles, career plans, or even required competence profiles and competence maps for orientation in a lifelong learning world. Indeed, curricula for formal education will also serve as guidelines for personal competence development plans. Here, new notions of education have to be adopted by educational institutions, changing from instructors to mentors of individual careers. That is to say:

- How can educational institutions provide services for orientation in flexible learning?
- What will these services of navigation and counselling look like?
- How can they be offered in an efficient way, does mediating them by information and communication technologies help?
- How can services of learning counselling be extended to a lifelong partnership of educational institutions and single learners?

Since competences are embedded in practice, the notion of competence-based learning discloses the importance of non-formal an informal learning for personal development. This new view on learning calls formal learning into question. Established educational institutions are defined by formal learning, and *vice versa*: formal learning is organised by educational institutions. These leads to the following questions:

- How can educational institutions redefine their role, acknowledging the importance of non-formal and informal learning?
- What do educational settings look like that integrate non-formal learning in formal courses of study?

- Do formal courses of study have to be abandoned entirely, or does it suffice to redesign them in order to integrate non-formal learning into them?
- Is there a systematic relation between formal learning and non-formal learning?
- How should formal courses of study be designed in order to prepare for non-formal and incidental (informal) learning?

It is our conviction that the needs of vocational (professional) education can only adequately be served if one takes a lifelong-learning perspective from the outset. A professional's educational needs and demands change continuously, becoming more elaborate and specific after she or he has completed initial education and has become part of the labour force. The traditional push model, with its emphasis on cohorts of students that have been synchronised in their development, and on curricula, which homogenise students' learning paths and goals, is not fit for lifelong learning, because it hardly makes room for the individual needs and requests that are characteristic of professionals. Lifelong learners can only be properly served by adopting a pull model which embraces non-formal and informal learning, does away with cohorts and predetermined curricula and treats learners as individuals, with, in terms of their capabilities, individual life-histories and goals. But will the educational establishment be able to achieve this? An important element of any answer to this question will be whether they can *afford* to make the transition. Are there business models that allow universities and schools to make such a transition? This is our next subject.

4.3 New business models

A generally accepted definition and classification of business models does not exist. One of the established definitions refers to the entirety of the concept of how a company selects its customers, defines and differentiates its offerings, defines the tasks it will perform itself and those it will outsource, configures its resources, goes to market, creates utility for customers, and captures profits. It is the entire system for delivering utility to customers and earning a profit from products, services, and information flows. This includes a description of the various business actors and their roles, the potential benefits for the various business actors, and the sources of revenues (Fetscherin & Knolmayer 2004).

The challenges that formal learning has to face can be described as the move from a scarcity of high quality and well-structured digitised material, to an abundance, with much that is free for non-commercial use (as in *Open Educational Resources*, OER). As with general consumer markets (e.g. telecommunications), the likely effect is that learners will want to drive down the amount, perhaps even to zero, that they are willing to pay for the learning content offered to them.

The market for non-mandatory, post-initial learning is broad, encompassing lifelong learning, training and continuing professional development, as well as higher education in general. At the professional learning end, communities of practice may become a major source of up-to-date information on responses to the interrogative pronouns (what, how, when, why, which, where, who, what-if…). Indeed, in Section 3 we have argued for the advent of peer-support services and for eclipsing the distinction between communities of learning and professional communities, between learning networks and knowledge networks. But this could make peer-to-peer viable, at low or no cost to learners, with dire implications for learning providers. Currently-favoured learning paradigms, which could be affected by those changes, include ways to model knowledge creation, retrieval, appropriation and modification, and ways to contribute to a knowledge commons (e.g. Open Research).

To be viable, business models must enable their users to anticipate and succeed against current and future competitors, including the extreme case of the competitor that has the potential to take over a core market or to destroy it: the so-called "nightmare competitor", which typically arises from outside an established industry. The April/May 2008 issue of the Open University newspaper, *Open House*, shows an "inside-ODL" response to this challenge, in its article *The University's nightmare competitor… is being built in-house*. The article begins 'A team of OU academics, technologists and strategists has been working with UK and US consultants to design and build the OU's nightmare competitor – before someone else does. The project is called SocialLearn […]'. After describing OU work as part of the Open Educational Resources movement, notably in the OpenLearn project, it continues: 'However, while short-term funding has kick started the movement, the challenge now is to develop models that make efforts like OpenLearn sustainable. SocialLearn is part of the response to this, by developing business models and technical infrastructure to build onto content that continues to be free at the point of use […]. This prompts the following questions:

- How do we generate income from free learning tools and content?
- What organisational advantage is gained by, what in conventional wisdom looks like 'giving away the family silver' (such as our courses)?

The principles behind such business models are beginning to be articulated in books such as Tapscott and Williams' *Wikinomics* (2007), Benkler's (2006) *The Wealth of Networks* on how social production transforms markets and freedom. It is the educational establishment's job to translate these while remaining consistent with its mission and values. The question is whether one has the agility to respond, after all, establishment are usually not known for their their ease and speed to move.

Some degree of agility is necessary for survival in a changing environment, but as may be judged from Drucker's observation that a business is determined by its customers, agility is far from sufficient for survival. At a minimum, there has to be a way to cover the costs of providing any particular learning component, or innovative replacement for it, which is sustainable in the long term, and affordable in the short term; thus, any initial losses should be easy to cover from reserves, augmented if necessary by the borrowing capacity of the organisation and by its cash flow. Typically, this means subsidising courses through some mix of (preferably stable, meaning reliable) funding sources, such as:

- Subsidies, grants and contracts from public/private sector, foundations
- Donations (including those from alumni)
- Profits in commercial areas of work in higher education (e.g. consultancy, licensing intellectual property, selling course components)
- Endowments and interest on any cash at hand.

For quite a few years it has been apparent that stern competition is coming to traditional learning institutions, both from established players in other marketplaces (e.g. software training, publishing, entertainment), and from radical innovation by start-ups and by web-empowered individuals. Examples of the basis for that sterner competition include:

- Cost of input (volunteers are free, as in *Wikinomics*)
- Price of output (internet-delivered material can be free)
- Ease of study (learn more, study less; shorter time-to-competence)
- Freshness (up-to-date content and stance, faster delivery)
- Personalisation (just-for-you)
- Relevance (tuned-to-work needs)
- Nearness of support (local provision instead of at a distance)
- Perceived and actual value of support (shift of roles, from tutors to more-valued roles such as mentors, coaches and supporters)
- Social engagement (make more and deeper friendships)
- Status of courses (some industry players offer higher-rated qualifications).

Radical innovation at low or no cost is becoming significant and is bringing nearer the prospect of a disaggregated marketplace that reduces or eliminates the income that the current players derive from each of its elements. Conventional thinking is that such players will be able to find profitable niches which will enable them to survive, despite the trend in higher education towards disaggregation. Learning resources and services will become freely available from multiple sources; they will be joined technically (interoperable); and they will become recognised by other institutions. Disintermediation

looms, meaning that learners could by-pass today's course providers, and assemble their own versions of a course, at much lower cost (maybe even free). Similar content, similar support and similar opportunities are emerging for internationally-recognised certification.

The challenges at the same time also show the way to new opportunities. As highlighted by the ProLearn Network of Excellence, there are some promising new markets (Lefrère et al. 2008). First, there is the market for students and organisations interested in long-term success. To be successful organisations and professionals alike need to balance exploitation and exploration, they need to use their present (collective) knowledge to make a living and at the same time as explore what expertise to gain next. This is a major aim both in knowledge management and in continuous professional learning by individuals. Focussing on learning institutions, there could be a large market for solutions to this generic need. The solutions could be based upon current courses, augmented by personalised learning and mentoring services. Almost certainly, new business processes would be required for those personalised learning and mentoring services. In principle communities of practice could invite their members to come up with innovative ideas for processes, which could then be registered (in the sense of intellectually protected), with the goal of ensuring they remain free to learners, the public sector and small businesses. This leaves open the possibility of charging large companies for their use.

Organization Science has identified other important yet under-researched areas, each of which could lead to new combinations of courses and services. In the words of Gorelick et al. (2004, p. 35): 'the opportunity provided for Knowledge Management practitioners, is to integrate people, process, and technology functions to support continuous learning for the purpose of increasing organisational performance.' It also adds the idea that knowledge management contains discourse management, which, in turn, contains agreement- and disagreement management (cf. Naeve 2001). Pertinent questions are:

- How do organisations learn and unlearn under conditions of organisational impermanence (e.g. project firms, which are set up to hit a single target and are closed as soon as their single target is achieved); many knowledge workers will find themselves working for such firms – what form does effective learning take in such cases, and what business plans would be interesting?
- How do people and organisations learn (or fail to learn) from experiences that are both significant for them, and rare.

Questions such as these are the subject of intense research within the (rapidly converging) communities of Technology Enhanced Learning and Knowledge Management. A good summary of important connections between individual- and organisational

learning is given by Kim (2004), and a competence-gap-based framework for professional learning processes by Naeve and colleagues. (Naeve et al. 2007).

5 Concluding remarks

In Europe, few people seem to doubt that we are heading for a knowledge society. Equally few people, at least at the level of European policy making, seem to doubt that forms of lifelong learning are the answers to the challenges the knowledge society poses. Section 2 argued at some length for the plausibility of these two, widely-held opinions. It provided evidence and gave arguments that research is needed in at least two arenas, that of competences and pedagogy, and that of business models.

Lifelong learning is not an entirely new concept, if only because it builds on such notions as continuous education, reschooling, etc. However, the rapid pace at which existing knowledge and its associated competences become obsolete as well as novel knowledge and its associated competences are required, demands approaches that are only similar to existing ones in that they address phases of education that follow initial, mandatory education. However, they are vastly different in almost all other aspects. These differences one can conveniently summarise under the heading of an uncompromising need for personalisation. We discussed such notions as logistic flexibility, didactic flexibility and content (context) flexibility to describe the dimensions that the personalisation of education needs to acquire. Personalisation, and the flexibility it insists on, has consequences for the way we think about competences, about competence profiles and about the way we fill competence 'gaps'; it also implies that received notions of effective pedagogies need to be rethought. Section 3 attempted to inventory the research questions that have to be addressed to make headway in this respect.

If learning should become competence based and if we need pedagogies that support personalised forms of learning, will the traditional institutions of education - our schools and universities - be able to adjust to this new situation? This is the question addressed in Section 4. After all, the kind of education they provide is couched in rather formal settings. To put it uncharitably, with them a student's ability to make his or her own choices ceases the moment he or she sets foot in a school of university. Then lecturers and professors, curricula and lecture schedules take over. Formal learning is orthogonal to personalised learning, for the latter we require non-formal learning opportunities. Did we already have trouble to determine what those opportunities exactly look like in terms of underlying pedagogy and competence profiling, establishing what business models support this kind of learning is similarly hard. One important element of such business models we identified already: socially constructed knowledge. Both basic resources

(content) and support services will largely have to be provided by the learners themselves. Not only because customised services and content would otherwise rapidly become prohibitively expensive, but also because peer involvement is part and parcel of the pedagogical innovation that is needed. If knowledge communities (networks) and into learning communities (networks) become indistinguishable from each other, then being a learner and being a teacher become roles that one adopts: with respect to particular peers and particular subjects, one acts as a teacher, with respect to other as a learner.

But there may well be another ingredient needed. Over the last 50 years or so universities have been faced with increasing numbers of students, much in the way the absolute number of learners will increase if all Europeans are to become lifelong learners. Hiring ever more lecturers becomes quite costly, in terms of salaries to be paid, but also because hours spent teaching are hours not spent being productive as a knowledge worke. And the whole point of the knowledge society is its hunger for knowledge workers. Thus far, universities have seen only two ways out of this predicament. Traditional universities have done so by following a 'broadcasting approach': increasing the student-staff ratio by building larger lecture halls, by combining groups, by offering fewer contact moments, etc. Distance teaching universities have created written course materials with a kind of 'built-in' tutors. Such materials have been tested extensively before their release and thus try to identify and clear out of the way all the stumbling blocks a student might encounter. Both approaches cut staff cost, but only serve large, homogeneous groups. Personalisation falls victim to either approach.

In this respect universities resemble businesses that serve their customer base by providing few, standard products. Cases in point are the book, music and movie industries. The costs of, say, keeping several copies of a book in a brick-and-mortar store are so high that those costs can only be borne for books that sell lots of copies in a short period of time. Books that demand little or infrequent interest are thus commercially impossible. Educational opportunities that only serve a few, occasional learners run into the same problem. Amazon, however, because it uses the Internet as its distribution channel, serves such a huge customer base that the collection they are able to maintain is much, much larger than your downtown bookstore. They are thus able to offer a much wider collection (Brynjolfsson et al 2010). Chris Andersson (2007) in his book *The long tail: Why the Future of Business is Selling Less of More* suggests that, with the advent of the Internet, this business model is becoming wide-spread. Widening distribution channels and ever further lowered transaction cost allow businesses to serve ever more specific customers. This very much sounds like the kind of personalisation lifelong learners demand and would thrive on. If universities would be able to seize this

But will our current educational institutions be able to transform themselves along these lines? Will they make use of socially constructed knowledge and harness the long-tail phenomenon, thus providing non-formal learning opportunities alongside formal ones? Ultimately, only the future can tell. The signs are not hopeful, though. Many universities pride themselves on their centuries-long history of success. They survived through the industrial revolution, indeed thrived on it. Will they be able also to make the transition to the knowledge society?

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