NeLLL Research Programme 2008-2012

Responsiveness, Flexibility, and Sustainability in Lifelong Learning

Introduction

Lifelong learning is "... all purposeful learning activity, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence" (Commission of the European Communities, 2000, p. 3). Research on lifelong learning has an important and special societal relevance. Both in work and in daily life, the demand on what one needs to know and do (i.e., one's competences) to function adequately quickly increases in the course of one's productive life. At the same time the knowledge and skills usually acquired during initial education concomitantly become increasingly obsolete as a result of ever more rapid societal, technological and organisational innovations. The potential problems arising from this situation are amplified by the proportional increase of the aging in the larger population as a whole, due to demographic factors and a continuous increase of life expectancy. Thus, lifelong learning is essential for individuals to keep up with their world and, more in particular, for professionals to keep pace with the constantly changing global job market and technology (Borg & Mayo, 2005; Spring, 2008).

Lifelong learning became a worldwide topic of discussion in the 1970s with the publication of a report by UNESCO, which called for lifelong education as part of individual cultural and personal growth (Faure et al., 1972). The Organisation for Economic Cooperation and Development reconceptualised lifelong learning by making it part of human capital theory (Field, 2001). The European Union gave lifelong learning central prominence as part of the human capital requirements of the knowledge economy, and presented it as a key factor for the international competitiveness of European business and industry (Commission of the European Communities, 2000). To meet these challenges, lifelong learning research is needed to develop theories, models, approaches, and tools that contribute to (a) the desired increase of the number of employees with a degree from higher education, (b) upgrading and updating the competences of the working population, (c) the pro-active schooling of those whose employability is endangered, and, last but not least, (d) the creation of learning opportunities that contribute to cultural and personal growth and development of all citizens.

Research on lifelong learning is of utmost importance to meet these challenges, but also because it is not just an extension of the existing educational system, but an object of study of its own taking the special features of adult and innovative learning into account. This memorandum describes the research programme envisioned by the Netherlands Laboratory for Lifelong Learning (NeLLL) to conduct such research in the period 2008-2012. It will discuss, in order, the general aim of the programme, its central features, its programme lines, and a specification of research questions in each programme line.

Aim of the Research Programme

The mission of NeLLL is to conduct "...high-quality research contributing to the development of theories, concepts, models, instruments, and tools that help to understand, facilitate, and realize lifelong learning". To this end, the NeLLL research programme is theory-driven, praxis-inspired, and application-oriented. Theory-driven indicates that gaining a deeper understanding of the mechanisms playing a role in lifelong learning is central to all research conducted in NeLLL. Praxis-inspired indicates that such theory development best starts from concrete phenomena in the field of lifelong learning or—problems encountered with—the use of particular interventions therefore. Application-oriented indicates that the results of the research programme should have



an impact on the practical field of lifelong learning. For instance, the research programme yields theories and models to help implement on-the-job training and lifelong learning programmes in business and industry (cf. Sloep, 2008; van Merriënboer & Kirschner, 2007), design guidelines for improving multimedia learning materials for lifelong learners and the elderly (cf. van Gerven, Paas, & Tabbers, 2006), or learning-technology standards for open educational resources in the field of lifelong learning (cf. Jochems, van Merriënboer, & Koper, 2004).

Integrative Features of the Research Programme

Key integrative features of the research programme, which pertain both to what is learned and how it is learned, are responsiveness, flexibility, and sustainability. The integrative features apply to all projects conducted in NeLLL and aim to stimulate cooperation and exchange of ideas between programme lines.

The first integrative feature is *responsiveness*. The population in general needs to become aware of, on the one hand, the need to continue to learn and, on the other hand, the formal and informal possibilities to do so. In addition to a broad repertoire of skills and knowledge, lifelong learners need to know when to do what, that is, they need well-developed self-directed learning skills to set their learning goals and to evaluate, monitor, and plan their learning activities to reach those goals. For instructional methods and educational systems, responsiveness refers to the ability to continuously assess needs of lifelong learners and monitor their progress, so that adaptation, personalization, and forms of on-demand education become possible. At the collective level, it

also pertains to the required ability of organisations to identify pertinent technological and societal trends and new developments in order to be able to accommodate to them. Responsiveness is thus a 'conditio sine qua non' for making best use of flexibility.

Such *flexibility* is the second integrative feature of the research program. With regard to the outcomes of lifelong learning, at the individual level it pertains to the ability to apply knowledge, skills, and attitudes in different contexts and professional situations, such as indicated by the terms 'transfer of learning' and employability; at the collective level



it pertains to the ability of organisations to innovate and participate in a continuous process of renewal in order to improve performance. For instructional methods and educational systems, flexibility is typically used to refer to desirable independence of time, place, and predetermined pedagogy, giving lifelong learners the opportunity to participate in learning activities whenever and wherever they want in a way that is maximally tailored to their needs and desires. In addition, organisational methods should make it possible to construct learning contents and experiences on the spot, without the limitations of predesigned, fixed courses and programmes.

The third and final feature is *sustainability*, which refers to humanity's investment in processes and systems that are viable on an ongoing basis and last indefinitely, that provide increased quality of life for both individuals and society as a whole, and that preserve natural ecosystems. The skills, knowledge, and attitudes (or, competences) critical to lifelong learning should be sustainable in the sense that they enable learning across the lifespan. Examples are 'sustainable assessment' (Boud, 2000) as well as other self-directed learning skills, which allow learners to self-assess their own performance, identify points of improvement, and plan future learning. Equally important, instructional methods and educational systems should aim at sustainability too, meaning that they are viable on an ongoing basis, for instance, by applying principles of sustainable development and self-organised systems.



Programme Lines

The integrative features of the NeLLL research programme – responsiveness, flexibility, sustainability – play a key role in all of its programme lines. From the start of the programme in 2008, four programme lines have been foreseen. These programme lines ensure that a broad, multidisciplinary perspective is taken on lifelong learning by varying on two dimensions: (1) from generic issues to specific implementations, and (2) from individual to collective perspectives. Two programme lines, 'cognition and instruction' (Programme Line 1) and 'tools and guidelines for learning networks' (Programme Line 2), focus on generic issues in lifelong learning:

- Lifelong learning: Cognition and Instruction. Programme Line 1 studies instructional methods for lifelong learning and broadens the cognitive basis for the development of these methods. Projects in this programme line might study, for example, instructional methods that aim at the acquisition of sustainable assessment skills and other self-directed learning skills enabling lifelong learning across the lifespan; organisational principles that allow for the flexibility to accommodate the extremely heterogeneous group of lifelong learners (re. age, prior knowledge, culture, work setting etc.), and assessment methods that make it possible to adapt and personalize applied methods to individual needs of lifelong learners.
- Lifelong learning: Tools and guidelines for learning networks. Programme Line 2 studies artefacts for lifelong learning (including tools, self-organising systems, learning networks etc.) and develops new learning technologies for constructing and deploying those artefacts. Projects in this programme line might study, for example, factors that affect the sustainability of self-organising Web-based learning communities; learner support services that have the flexibility to be applied across different organisations, and tools and procedures for the Assessment of Prior Learning (APLⁱ) that make it possible to adjust learning trajectories to prior experiences of lifelong learners.

The other two programme lines, 'professional and personal development' (Programme Line 3) and 'learning organisations in the knowledge society' (Programme Line 4), focus on specific issues in lifelong learning and particular instantiations of methods and artefacts:

- Lifelong learning: Professional and personal development. Lifelong learning is an effect of
 a broad range of conditions external and internal to the individual, while at the same time
 it can have a profound effect on professional and personal development. Programme
 Line 3, thus, studies the conditions for and consequences of lifelong learning for
 professionals and individuals, how they are determined, and how they can be stimulated
 and optimized. Projects in this programme line might, for example, study the role of
 science & technology museums to heighten personal awareness about sustainable
 development; factors in vocational and professional education that contribute to
 sustaining the employability of learners, and systems of coaching and intervision at the
 workplace that contribute to lifelong learning.
- Lifelong learning: Learning organisations in the knowledge society. Programme Line 4 studies how particular learning organisations (i.e., profit and not-for-profit organisations), learning cities and regions, and other types of organisational networks affect lifelong learning at the collective level. For example, projects in this programme line might study the environmental sustainability of particular educational systems for lifelong learning such as specific on-line learning environments versus specific, traditional classroom environments; how lifelong learners contribute to the innovative power and competitiveness of business and industry in a particular sector, and how lifelong learners in, for example, financial, industrial or medical organisations might make it easier to anticipate on new technological and societal trends.

The following sections describe the object of study of each programme line in more detail.

Programme Line 1: Lifelong Learning: Cognition and Instruction

Programme Director: Prof. dr. Fred Paas

The mission of this programme line is to promote formal and informal, lifelong, individual and group learning (i.e., expertise development) in complex cognitive domains. This will be accomplished through uncovering the underlying cognitive processes and the development of a detailed and comprehensive theory of instructional design. The focus is on authentic learning tasks based on complex real-life experiences as the driving force for learning. Providing learners with authentic 'whole' tasks is believed to help them (a) to *integrate* the knowledge, skills, and attitudes necessary for effective task performance, (b) to give them the opportunity to learn to *coordinate* qualitatively different constituent skills that make up this performance, and eventually (c) to enable them *to flexibly apply* what is learned to their daily life or work settings (i.e., transfer). In addition, the key to surviving in an ever more rapidly changing and complex world with increased emphasis on web-based learning, remote learning, blended courses, and lifelong learning is learning how to learn. Therefore, the ultimate goal of instructional design for lifelong learning is to arrive at sustainable learning, which means that learners have acquired such a level of expertise that they are able to regulate and sustain their own learning.

A basic assumption of the programme is that effective and efficient learning can only commence if the instructional methods are aligned with the learner's cognitive system. Therefore, an important research focus is on uncovering the cognitive processes that underlie lifelong learning. The results of this research can be used to develop and investigate guidelines for the design of learning tasks, arrangements, and assessments that stimulate lifelong learners to integrate the knowledge, skills, and attitudes that underlie effective task performance. Those guidelines have to take the properties of the cognitive system and individual differences such as current level of expertise and age into account. The level of expertise mediates the effectiveness of instruction. Instructional interventions that are effective for low-expertise learners are not necessarily effective for high-expertise learners and vice versa (Kalyuga, Ayres, Chandler, & Sweller, 2003). Age is a learner characteristic that is known to impact the knowledge structures underlying the cognitive architecture (Paas, Van Gerven, & Tabbers, 2005). A general and robust effect of cognitive aging research is that age-related declines in cognitive performance are most likely to emerge in complex cognitive tasks requiring effortful processing or multimedia tasks requiring multimodal processing (e.g., Paas, Camp, & Rikers, 2001; Perfect & Maylor, 2000). However, it is important to realize that higher levels of expertise are associated with more evolved and complex schemas, which on the one hand might ease load while on the other hand need to be accommodated due to updated and upgraded new knowledge. In other words, the effects of aging may primarily show in learning novel tasks or information, and less when older individuals can build on their expertise and are able to compensate for their cognitive declines.

Research Topics

Learning is experiencing and all experience leads to learning. But, what distinguishes incidental, accidental and unplanned learning that happens every moment of our conscious existence from intentional, purposeful and planned learning is that there is: (a) a planned, professional thus domain-specific *task* to be learned, (b) some form of explicitly planned *arrangement* for the person or group of persons learning from a set of tasks and (c) some form of organised *assessment* of the processes and products of learning the tasks to promote learning. Learning tasks contain an assignment and offer information to learners which relates to their prior knowledge and helps them carry out the assignment. Arrangements combine learning tasks and other instructional elements in such a way that learners receive an optimal level of support and guidance. Arrangements can either be fixed or adaptive. Whereas fixed arrangements consist of



a predefined sequence and type of learning assignments, in adaptive arrangements the sequence and type of assignments is responsive to the learning needs of an individual or group of learners. Assessments are either used to assess or diagnose individual or group learning, uncover cognitive processes, or foster learning.

These three elements are necessary features of "instruction" and thus relevant for each of the three themes within this programme line.

1. Complex learning

Complex learning aims at the application and the transfer of knowledge, (meta)cognitive skills, and attitudes. This poses special requirements to the design of learning tasks, arrangements and assessments (van Merriënboer & Sweller, 2005). Research indicates that many instructional methods that work well for simple tasks do not work well for complex tasks, and vice versa. However, in general, the tasks used to examine how different variables affect complex learning have been relatively simple, placing relatively modest demands on the cognitive system. This raises the question if complex learning was really investigated here. This theme aims at providing recommendations for complex learning using relatively complex tasks that pose greater challenges to the cognitive capacity of individual learners or groups of learners. Important questions to be addressed within this theme include:

- How do learning tasks affect processes of prior knowledge activation in lifelong learners?
- How can support and guidance for lifelong learners be arranged in learning environments in such a way that it is useful for low-expertise learners without distracting high-expertise learners?
- How do effective assessment strategies for the development of complex learning differ from strategies for the development of simple procedural skills?

2. Multimedia learning

In multimedia learning learners have to select incoming verbal information to yield a text base and incoming visual information to yield an image base. Next, they have to organise the text base and the image base in order to create a verbally-based model and a visually-based model of the tobe-explained system. Finally, they have to integrate both models by building connections between corresponding events in the verbally-based model and the visually-based model. Those cognitive processes need to be well understood before multimedia learning tasks, arrangements, and assessments can be designed in accordance with the learner's cognitive architecture which is a condition for effective and efficient learning. Important research questions within this theme include:

- How can learning tasks be designed that support the cross modal integration of verbal and pictorial information?
- What effects do different sequences of media in learning arrangements have on learning during expertise development for students with different levels of expertise?
- Which combinations of media can be used to design effective assessments of multimedia learning?

3. Self-regulated learning

Self-regulated learning requires students to make good study decisions resting on accurate monitoring of ongoing learning, a realistic model of how learning happens, and appropriate use of study strategies. A basic assumption of the research program is that the ability to manage unsupervised learning effectively can be promoted by gradually decreasing control of the learning process by others. Such a process goes from almost exclusive control by others, via shared control by others and learners, to almost exclusive control by learners themselves, whilst supporting the learners' acquisition of skills required for taking control. Assessments – traditionally used to assign grades to students – play an important formative role in this process.



- Which types of learning tasks can be used to enhance self-regulation skills for students at different levels of expertise?
- How should fixed or adaptive arrangements of learning tasks be designed to support the transition from exclusive control of the learning process by others to exclusive control by learners themselves?
- How can assessments be exploited to enhance self-regulated learning?

Programme Line 2: Lifelong Learning : Tools and Guidelines for Learning Networks

Programme Director: Prof. dr. Peter Sloep

Programme Line 2 on tools and guidelines for learning networks puts the notion of a Learning Network centre stage. A learning Network is viewed as a particular kind of online, social network, one that specifically has been designed to support lifelong learning (Koper et al., 2005; Sloep, 2008). Such networks are set up as a means to meet the challenges posed by lifelong learning. Their design is informed by several assumptions, some of which are well underpinned by extant theories, others less so.

The main challenge that the organisation of lifelong learning in learning networks seeks to address is posed by the gulf that seems to divide learning and working. Introducing a term such as 'professional training' is at best an attempt to bridge this gulf, at worst a terminological play to hide its existence. Young people learn at school, there they complete their initial, largely compulsory education. Once having become professionals, in our modern society the need to continue to learn or to develop themselves only increases (cf. Sloep & Jochems, 2007). Education has become post-initial and non-compulsory but no less necessary. Interestingly, the way such professional training is organised still very much smacks of the way formal, school-bound learning takes place, in groups, by specific 'trainers', loosely connected with one's everyday work. And this of course poses the transfer question: To what extent does what one has learnt this way affect work praxis? Or, put differently: How effective has this kind of learning been?

The answer to this question in part lies in how learning opportunities are fleshed out and arranged; for instance, what media have been used, what pedagogical principles have been involved? However, a significant part of the answer also lies in the way the activities of learning and working have been organised. It is a central tenet of this programme that the landscape of post-initial education should be altered, that learning and working should be integrated and smoothly, perhaps even unnoticeably grade into each other. This way, learning does not become an activity separate from working but an integral part of it, and *vice versa* (cf. Brown & Duguid, 2000). Learning networks are the devices that should make this possible. In learning networks, the notions of communities of learning and communities of practice remain conceptually different but become perceptively identical. The denizens of a Learning Network discuss various issues with each other and thus learn from each other. Sometimes, the relation may be less symmetrical and some act as learners, others as teachers; in yet other situations, education providers may address learning needs that have arisen out of such interactions, The discussion may be fully job related, have to do with personal development only, or anything in the middle.



To foster these kinds of interactions, learning networks need to be designed and equipped appropriately. The three programme themes discussed below all develop such design guidelines and tools.

Research Topics

1. Competence Development

The first theme focuses on competence development; It will provide a common language for analysing and describing competences that can be used throughout all kinds of education and all stages of a learner's career. Tracking the development of someone's competences, offering competence development opportunities, and monitoring how those opportunities are seized should therefore take the individual as its focus, not the school or the employer. The research questions to be addressed, however, take the network perspective and address the matter of maximising the competence notion's use for learning in learning networks. They include:

- What competence descriptions and maps are robust enough to support diverse interest groups and last a learner's full life span?
- What does this mean for the way specific ontologies for specific learning networks are devised?
- How should sets of learning opportunities be defined and described in order for them to be mappable to a specific competence map (learning routes)?

2. Learner Support

The second theme considers what kinds of support the inhabitants of a Learning Network need and how such support may best be provided to them. Whatever policies and instruments – political, social, organisational, technological – we have come to rely on in traditional educational settings, both in schools and the workplaces, they all need to be rethought. Learning in a Learning Network might well constitute a paradigm shift. If so, only a rethinking from the ground on up suffices, with new tools and guidelines based on novel insights. Important questions to be addressed include:

- What profiling data on learners need to be stored in a specific Learning Network to allow learner support services to operate adequately?
- What incentive structures, if any, are needed in a Learning Network to fire off and maintain learner support services in the long term? Are these structures dependent on domains, professions, or cultures?
- What technology is most suited to underpin what learner services in a Learning Network: semantic web technologies that demand explicit ontologies, statistical techniques based on language technologies, mixed methods, yet others?

3. Emergent Communities

The third theme focuses on the community level proper and addresses the question of how the emergence of communities within a Learning Network and their maintenance may be facilitated. It assumes that learning and working in social settings is going to be a crucial part of the answer. Learner support tools will feature large, as they will allow learners to get in touch with fellow learners in quite a natural way, that is, in ways that serve their immediate needs yet at the same time contribute to network sociability through the seeding and growth of communities within the network at large. Questions to be addressed here include:

- How should learner support services be configured so as to maximally contribute to the emergence of sociability and the maintenance of social capital in a Learning Network?
- How can desirable network structures be attained and maintained? To what extent are they bound by profession, domain, culture, age?



• How, if at all, can a balance be achieved between a Learning Network that is selforganising on the one hand and plays host to a variety of for-profit support service providers on the other hand?

Programme Line 3: Lifelong Learning: Professional and Personal Development

Programme Director: Prof. dr. Paul A. Kirschner

Individuals learn and profit from experience in both formal educational settings (e.g., continuing education, in-house training) and informal settings (e.g., on-the-job/workplace learning and/or learning from media, museums...). As such, lifelong learning is an effect of conditions *external* and *internal* to individuals, and it has effects on an individual's professional and personal life. One can ask under what social, cultural, and especially psychological conditions individuals learn during their lives, and are motivated to do so. One can also ask what the effects of this learning are on issues such as employment, personal health, feelings of well-being, quality of life, stress prevention in the workplace, understanding media discussions, and coping in daily life. Patterns of working, living, and learning must adapt and/or change leading to increased interest in the achievements and effects of lifelong learning, not only for improving oneself or one's position (i.e., as a means), but rather as a goal and as a source of health, development and enrichment of life. Lifelong learning, as such, is about:

- how individuals adapt and change to meet present and future challenges,
- how individuals use learning opportunities to bring greater fulfilment to their personal and working lives, and
- under what conditions the motivation and disposition to learn are present or can be fortified.

The responsibility for learning throughout and from life lies with the individual. In this sense, lifelong learning is a process of sustainable explicit and implicit learning, often relying on self-directed and self-regulated individual initiatives (Baumert, Fend, O'Neill, & Peschar, 1998; Pintrich, 1994; Zimmerman, 2001). If we apply this to a whole lifespan, then we must reconsider the notions, theories, and guidelines traditionally used in continuing education and lifelong learning with respect to formal learning in schools and/or training institutes) and informal learning in the workplace and daily life. In addition, new actors are entering the education field, blurring (Davis & Meyer, 1998) the division between providers and users (e.g., mixes and mashups). They develop and implement new content (e.g., open educational resources, participatory design), use new pedagogies (e.g., serious and persuasive games, self organising communities of learners) and new forms of media (e.g., social software/Web 2.0 such as blogs and wikis, interactive museums, mobile technologies), that lead to new forms of education (e.g., competence-based curricula, personal diplomas and certification schemes) with new methods of assessment (e.g., portfolios, APL), all of which are or need to be suited to different target groups, different professions and different expertise levels.

Research Topics

Programme Line 3 aims at the execution of high quality research focussing on the conditions for and the effects of lifelong learning for and on individuals in their daily lives (e.g., personal growth, health, and well-being), how they function in their work (e.g., stress prevention, employability maintenance, ensuring career achievement and motivation, and preventing burn-out, premature



leave and absenteeism; i.e., topics related to HRD and HRM) and in the communities of which they are a part (e.g., integration, assimilation, social inclusion and exclusion). This learning can take place in *formal* institutional ways such as in continuing education settings or employer organised learning and training situations and/or *in-formal* ways which can be either intentional but not highly structured such as goal-oriented self-improvement courses and/or self-help books or unorganised and not formally defined ways as in learning from internet, museums, media and so forth. Furthermore, learning will often be implicit (Reber, 1993), tacit, or unconscious and occur naturally during daily activities. This type of learning, also referred to as "life-wide learning", is also within the focus of Programme Line 3.

1. Lifelong Learning for Professional Development

Professionals develop heuristics and strategies for learning and carrying out their work (Gigerenzer & Todd, 1999). Because of their backgrounds, they make use of specific domain and profession related characteristics of their situations that influence their own needs when approaching lifelong learning. To this end, the conditions for and the consequences of lifelong learning for professionals need to be determined, stimulated and optimised. With respect to the *conditions for* lifelong learning for professionals, important research questions include:

- What characteristics of domains/professions and of their development influence the learning needs of those working in a field or profession, including learning-life historiesⁱⁱ?
- What profession-specific heuristics for learning and performing do professionals have, and how and when are they used, learned and improved in professional situations?
- What psychological (e.g., gender, race, ethnicity) and personal (e.g., time, money, prior education) factors influence lifelong learning for professionals and how can positive factors be optimised and negative factors eliminated or minimised?

With respect to intended and non-intended *consequences of* lifelong learning for professionals, research questions include:

- How is expertise developed within a specific domain (e.g., law) and/or profession (e.g., lawyer) including tacit knowledge and professional heuristics?
- What are the effects of a professional's acquired knowledge and heuristics/strategies on "unlearning" no longer relevant approaches to work so as to design effective and efficient learning environments for "new" learning (e.g., unlearning procedural programming for learning object-oriented programming) and how can they be offset?
- What guidelines can be discerned from the characteristics of expertise acquisition and development within professions for designing and developing responsive, flexible and sustainable learning environments (e.g., communities of practitioners, open courseware and forms of cooperative educationⁱⁱⁱ)?

2. Lifelong Learning for Personal Development

Individuals learn throughout their lifetime immersed in society and its artefacts (i.e., museums, clubs, libraries, media) in ways which affect their personal development and feelings of wellbeing. This theme first studies the conditions for lifelong learning for individuals with research questions including:

- How do individuals learn and develop in their daily routines including the role played by informal and formal workplace learning, informal and implicit learning in communities, informal and non-formal learning in and for society and its institutions?
- What personal skills need to be acquired and used for lifelong learning?
- What roles do informal daily contacts (i.e., with professionals, government, media, museums) play in lifelong learning and personal development?



With respect to the intended and non-intended consequences of lifelong learning on individuals, research questions include:

- What are the effects of lifelong learning on one's growth and personal deployment with respect to factors such as avoiding obsolescence and/or maintaining employability, and utilising/exploiting one's personal capital?
- What are the effects of lifelong learning on one's personal development and identity (i.e., the effects of life-wide learning?)
- How does the process of protoprofessionalisation^{iv} (de Swaan, 1990) of individuals based upon contacts and/or preparation for contacts with professionals through media (e.g., television, radio, newspapers, Internet) and independent study proceed, how can it be optimised and what are its effects on the lifelong learning of both those individuals and the professionals they encounter (i.e., the knowledgeable citizen)?

Programme Line 4: Lifelong Learning: Learning Organisations in the Knowledge Society

Programme Director a.i.: Prof. dr. Jeroen J. G. van Merriënboer

In current society, knowledge is a major creative force. Economic, social, cultural, and all other human activities have become dependent on the availability of a huge volume of knowledge and information. In addition, new technologies offer powerful possibilities for sharing, archiving and retrieving knowledge. The knowledge society realizes the importance of knowledge and proper knowledge distribution, sharing, and building for social and economic development. Success in the knowledge economy at the organisational level is no longer defined by what an organisation collectively knows and can achieve at any given moment, but rather by its ability to learn, change, and evolve. Learning organisations are critical in this respect, because they are "... skilled at creating, acquiring, and transferring knowledge, and at modifying [...] behaviour to reflect new knowledge and insights" (Garvin, 1993, p. 80). According to Senge (1990), they are "... organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together" (p. 3). In other words, it is any group of people, large or small, who are collectively responsive and act upon a need and a desire to improve its performance through learning.

The basic rationale for learning organisations is that in situations of rapid change only those that are responsive, flexible and productive will excel and even survive. Organisations that learn, that are flexible, that understand what their core commodities are, are fast becoming the most valuable organisations in our society, from both an economic and a societal perspective. Such organisations not only create the conditions that facilitate lifelong learning amongst their employees or members (in this context, often called 'continuous learning'), but also nourish a culture and structure in which organisational lifelong learning is central. In addition, according to theories of Strategic Niche Management (SNM), intensive networking among social actors or different organisations is a crucial process for the successful incubation of new—sustainable—technologies (Caniëls & Romijn, 2008). Thus, lifelong learning at the organisational and interorganisational level may be the single most important ingredient for success and sustainability.

Research Topics

This programme line studies lifelong learning both with regard to learning organisations and networks of such organisations:

1. Learning Organisations, Innovation, and Performance Improvement

The first theme focuses on processes of lifelong learning that take place within organisations (companies, professional organizations, governmental organisations, military and so forth). A learning organisation must find a right balance between the personal benefits of lifelong learning for its employees, and the collective benefits of lifelong learning for the organisation as a whole. This is not self-evident, and there often is a tendency to overestimate personal benefits. Furthermore, a learning organisation must find ways to combine two types of learning: (a) the acquisition of formal knowledge through more or less formal approaches such as industrial and business training, and (b) the acquisition of dynamic knowledge in informal ways such as on-thejob learning (Nevis, Dibella, & Gould, 1995). Organisational learning will only occur insofar these two types of learning strengthen each other (Gijselaers, Arts, Boshuizen, & Segers, 2006). The research in this theme will study how organisational lifelong learning contributes to continuous processes of renewal and innovation in order to improve the performance of the organisation. A relevant distinction here is between profit and not-for-profit organisations. Whereas they may share processes of sustainable development, social responsibility, and responsiveness to societal and technological trends, not-for-profit organisations will often not use the same performance indicators as profit organizations, such as competitiveness, market value and branding. An example of not-for-profit learning organisations are universities and schools, which fulfil a special role in the knowledge society because knowledge creation and knowledge transfer are their raison d'être. In addition, they must find ways to prepare their learners for lifelong learning - not only through the development of necessary competences but also through the creation of a mindset of participating in a global knowledge society that is highly international and multicultural (van den Bosch, in press). Important research questions for this theme include:

- What are adequate quantitative measures of lifelong organisational learning?
- How does organisational lifelong learning contribute to the innovative power and competitiveness of business and industry?
- What are the core competences of organisations that serve as launch points for new products and services and how can they best be developed through lifelong learning?
- How can knowledge management be organised in such a way that it contributes to organisational learning?
- How can educational institutions be redesigned to become learning organisations and optimally prepare their learners for the knowledge society?

2. Learning cities, regions, and nations

The second theme focuses on networks of organisations. The paradigm of Education & Training, which has served us quite well in the latter part of the 20th century, is no longer applicable to the knowledge society. The difference between education and training is not relevant anymore, because the knowledge society can only be achieved by making learning, lifelong and based on tolerance and enlightenment, the number one activity throughout the planet (Longworth, 2006). Lifelong learning emerges from interactions between—educational and non-educational—organisations, in highly dynamic networks that may be called learning towns, learning cities, and learning regions (see, e.g., Rutten & Boekema, 2007). In the literature, different perspectives are found. If the perspective is taken of urban development departments of cities and universities, a learning city or region will emphasize the physical and technological infrastructure of city regeneration, and where the focus is on employment, organisational management and industrial training, the development of human and social capital for economic gain tends to dominate. The key insight, however, is that networks of people and organisations may give rise to processes that drive and sustain lifelong learning (e.g., innovation, knowledge valorisation), contribute to the



- What mechanisms in successful learning regions are responsible for an increase in lifelong learning-related activities?
- What does lifelong learning mean in the context of the city, the community and the region?
- How would cities and regions know that they are 'learning cities' or 'learning regions', as opposed to cities and regions that just support education and training?
- What are the tools and techniques that can help cities and regions to evolve into 'learning cities' and 'learning regions' and to reach longitudinal rather than short-term outcomes?
- How do 'learning cities' and 'learning regions' contribute to the development of the knowledge society and how are they related to globalisation?

Summary Table

NeLLL Research program 2008-2012		
Responsiveness, Flexibility, and Sustainability in Lifelong Learning		
	Individual perspective	Collective perspective
Generic issues	Program line 1	Program line 2
	Cognition and Instruction	Tools and guidelines for learning networks
	Complex learning	 Competence development
	 Multimedia learning 	Learner support
	 Self-regulated learning 	 Emergent communities
Specific issues	Program line 3	Program line 4
	Professional and personal development	Learning organisations in the knowledge
	 Lifelong learning for professional 	society
	development	 Learning organisations, innovation,
	 Lifelong learning for personal 	and performance improvement
	development	Learning cities, regions, and nations



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ⁱ In Dutch: EVC.

In Dutch: leerloopbanen

^{III} Cooperative education is "a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to a student's academic or career goals." (National Commission for Cooperative Education, 2000; see also Kirschner, 2000). In Dutch: duaal leren.

^{IV} Protoprofessionalisation is a general term for the processes of 'medicalization', 'psychologization' and 'juridization', et cetera of everyday life. It involves the process of professionalisation of individuals outside of a profession whereby they increasingly orient themselves in everyday life to the fundamental notions and positions and attitudes of a profession.