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New Learning of Adults in the Information and Knowledge Society

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Abstract: New Learning in analogy to New Economy means a new paradigm of learning. Old Learning was learning with a continuous learning history in mind. New Learning means, that the continuity of a learning history is stored in a computer memory and can be quickly accessed. The external storage generates a better and more precise continuity of individual historical learning experiences and shifts the focus of cognitive energy to cognitive creativity. If knowledge is managable as the new discipline knowledge management offers, this new approach will make sense.

Keywords: New Learning, eLearning, Knowledge Management, Self Learning, Cognitive Creativity

Categories: K.3.1, K.3.2, K.7.3

1 Approach to the New Learning Paradigm

The information and knowledge society of the 21st century will bring out a new learning paradigm, which is called New Learning (NL). NL is the consequence of practical and theoretical developments in a multidisciplinary field of sciences. Computer science is no doubt the most successful science for learning with its practical information and communication technologies (ICT) and applications. But the economy was enriched by the computer and the World Wide Web, which resulted in the “New Economy”. In analogy to the “New Economy” the term “New Learning” has been chosen. In the case of the “New Economy” the Web has brought out the Dot Coms and the idea of the globalization of business and commerce, where each company is only one mouse click away from you. This is of enormous economic relevance for the business-to-business market, which means to share the workforce on a global basis. Now we are moving to the information and knowledge society, which means that we are sharing our knowledge on a global basis. The consequence is that knowledge is shared between individuals and virtual teams in conjunction with knowledge management systems.

Today the World Wide Web is the main catalyst for the progress in learning methodologies and applications. Computer assisted learning, computer based training, distance learning, tele-learning, web based training and high-level knowledge management eLearning platforms are practical tools for the NL. Today eLearning tools are integrated into standard software, like Microsoft Office XP (Experience) with its PowerPoint 2002 function of online or on demand broadcasting of slides in combination with streaming video and audio over the Web.

In Europe eLearning is also a policy within the eEurope programme of the European Union. According to the Lisbon European Council, held on 23 and 24 March 2000, the eLearning initiative addresses the effective integration of ICT in education and training. eLearning seeks to mobilize the educational and cultural communities, as well as the economic and social players in Europe, in order to speed up changes in the education and training systems for Europe's move to a knowledge-based society. The objectives of the eLearning initiative are:

- the acquisition by the citizens of Europe of the confident use of the new tools for accessing knowledge and the widespread development of a "digital literacy", adapted to different learning contexts and larger groups;
- getting the innovation potential of the new technologies to work for the development of teaching practices and the requirements of lifelong training. A new learning environment can be created which favors autonomy, flexibility, decompartmentalisation of subject areas, establishing contacts between centers of culture and knowledge and facilitating access by all citizens to the resources of the knowledge-based society.

The eLearning initiative is based on four main lines of action:

1. Equipment (multimedia computers with access to digital networks, goal for 2004 in Europe's schools: 5-15 users per multimedia computer)
2. Training at all levels (focus on the skills how to use the new technologies in learning; new types of relationships between students and teachers; new skills for initial and continuing training; new ways of training needs analysis for vocational training to get the qualifications of workers in industry and services)
3. The development of good quality multimedia services and contents
4. The development and networking of centers for acquiring knowledge (universities have already started with web based training)

Instead of reading books, solving exercises with paper and pencil, viewing and listening lectures, participating in classroom discussions the learners of the 21st century are communicating, interacting and transacting with computer-mediated networked devices like PDAs, mobile phones, Bluetooth devices, UMTS phones, game consoles, notebooks, desktop PCs, access points and information kiosks. In the near future every device with a display will be connected to the net and therefore will have an attribute of a learning platform.

On the theoretical level the NL will be focused on the new evolutive scientific paradigm, which emerged in the second half of the 20th century: The evolutive dynamic scientific thinking is not restricted to biology and biochemistry but is towards a universal model for all new sciences, e.g. cognitive science, neurobiology, second order cybernetics, philosophy of mind, artificial intelligence, social psychology, cross culture psychology, sociology, neuro-linguistics, philosophy of self-organization, newer evolutionary theory, game theory, decision theory, artificial life, robotics, virtual reality and "theory of everything". The new way of thinking and learning is determined by the evolutive cognitive creativity of the human as a cyber-organism – the individual integrated in collaborative multidisciplinary teams. Cognitive creativity is the nucleus of the new learning paradigm.

2 Self-learning, eLearning, New Learning and Cognitive Creativity

Self-learning (learning while alone, using one medium, e.g. book or private teacher) or one-to-one learning gets a new meaning by the use of ICT. In ICT-learning or eLearning the medium is substituted by the networked computer device and its applications. eLearning is individual self-learning with lots of advantages for the learner, e.g. the higher density and differential variety of interaction between learning content (knowledge) and learner in comparison to group learning (classroom learners).The individual learning with a real private teacher means that the main function of the teacher is an interaction manager between the content and the learner.

What are the different communication, interaction and transaction strategies of the interaction manager to achieve a learning success? Interaction means to discuss, to surf through the World Wide Web with more or less explicit goals. Transaction means to fulfill a specific goal, e.g. an ordering process for a product including processing the logistics from receiving the product against paying for it with a bank transaction. In the year 1994 we have set up the Interactive Information Center in Austria, which is a vocational training center of the Styrian Economic Chamber, where the trainees had to be learn basic skills which is now known as the ECDL (European Computer Driving License: email, surfing, searching, basic IT concepts, office applications). Today I would rather set up a Knowledge Transaction Center, which is a connection center to knowledge provided by virtual teams, real experts and computers (AI expert systems). This connection center is commercially known as ASP (application service provider), e.g. the new language translation functions in Microsoft Word XP 2002, where if the phrase cannot be translated it is automatically routed via the Web to real humans who solve the task for the amount of US$ 50.

The goal for every learner is to apply and use the content practically like an expert or a master. An expert has deep knowledge and is able to solve new problems. A master is an expert with full integration of concepts, values and judgments and is able to apply this knowledge ad hoc in a variety of new situations. In self-learning (learning while alone) the role of the interaction manager is virtual and internalized into a private, individual learning ritual. In eLearning the role of the interaction manager is done by a computer program which uses implicit or explicit learning theories.

Today the advantages of eLearning with multimedia content, animation, simulation, high-speed web and database access over networks, learn tracking, knowledge tracking and other strategies are commonly evident. The disadvantages of eLearning are the lack of real personal interaction with group dynamic effects.

New Learning goes one step further. eLearning means that the learning content must to be transferred from external to internal or in other words, from the book to the brain/mind. But is the need for continuity of the learning history in mind really necessary? New Learning implies the hypothesis that this continuity is no longer needed if and only if there is a certain skills level for dealing with content, methodologies, structures and problem solving. So New Learning is restricted to adult learning supposed the skills level to process the structure of the content-less knowledge processing is given and is possible. The basic skills level is the high school level, more focused on ECDL knowledge and structural methodological skills (deduction, induction, probabilistic reasoning, and philosophy of science). If this is possible – and the new ICT-tools will show how successful they are – then universal access to digital information and knowledge and the use of personal digital assistants (PDA) is a must for all citizens of a knowledge-based society. Exactly these demands are implicitly included in the eLearning policies of the European Community and other countries.

To substitute the long term memorizing function of the brain, tracking the individual learning and knowledge progress (history) is one of the main functions of a PDA. This external function generates a better and more precise continuity of individual historical experiences and shifts the focus of cognitive energy to cognitive creativity. E.g. lots of knowledge tasks can easily transferred to PDAs with GPS integration, like getting immediately the right way using trains from the Narita airport to Nippori to Ikebukuro to Wako-shi to RIKEN. Large institutions like big fairs are developing such PDAs now to give it to visitors to find the right way to the meeting points easily. The saved time can be used for cognitive creativity, which means e.g. to find relevant questions, to find alternatives or better solutions or new problems – or simply to be not too tired to do more intelligent tasks.

3 Pragmatic Approach to New Learning in Adulthood

The NL paradigm generates some criteria on how to structure information and knowledge to be used by humans and PDAs. Information has to be stored as content networks with interfaces for setting up broader contexts. Today, some efforts are being done by setting up knowledge management (KM) infrastructures to generate trans-human knowledge systems to support the innovation strategies of knowledge-rich companies. Intellectual capital reports of companies are an indicator how hard the Western society tries to deal with human-independent knowledge sources. The Knowledge Management tools today are still very primitive but they are the first epi-genetic processes using computers to adapt to the environment in a better way than using just natural genetic processes. Especially KM-tools will help the ageing brain to substitute dysfunctions.

PDAs use collective knowledge and individually tracked private knowledge to support the learner. What has been forgotten knows the PDA – and shows videos if necessary. The new quality of instant ICT-non-self-owned knowledge access in comparison to self-experienced knowledge compensates the differences between young and older learners in memorizing content quantities and experiences. Therefore the NL paradigm reduces the importance of the storage of information, content, facts and descriptive experience, because these elements exist universally within the network.

The NL society has to know how to design and use the PDAs, how to access the networks, how to find the relevant information, how to speed up the comprehension processes and how to generate new and feasible ideas. So the main process of NL is the cognitive creativity.

In the NL paradigm vocational training and learning in late-life gets a new meaning, but only if the structure of the brain is ready for instant content acquisition and application to succeed in a new environment. Therefore the evaluation of the learning success is essential. eAssessment and eCertification are in principle proper methodologies to proof the effort of learning. Industry qualification methodologies, e.g. certification tests have already shown that the achieved skills levels meet the requirements of real life problem solving. But e-assessment/self-assessment and certification tests are in the beginning. One of the big challenges will be eAssessment and eCertification in a non-controlled environment, e.g. a certification test at home. The development of home- and mobile-based eAssessment and eCertification has already started and will be further developed in the next couple of years. In combination with the external learn and knowledge tracking these systems accessed with PDAs make a New Learning methodology feasible.

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