Norbert Lang*

New Media-Based Learning

Learning is principally media-based. However, media creates totally different learning conditions, possibilities and cultures. The following article deals primarily with the requirements for learning in the information society and with the questions of how, why and under which conditions the New Media can meet these requirements.

Six years ago I developed a multimedia-learning programme (CD ROM). Subsequently, a small group of students and I evaluated this programme as to its 'surplus value" in comparison to up-till-then used textbooks. Most of us emphasised that the use of the learning programme had been more fun by all accounts. A learning programme that is fun! Is one to take it seriously? Is it as "good" as a true "sweat-and-tear programme"? Of course, learning processes demand effort and encouragement. But if one replaced "fun" by "led by interest" or "intrinsically motivated", it would become clear that it is even superior particularly and exactly amidst the new and future requirements for professional learning! These requirements are necessary for an 'expansionary' learning style, i.e. a learning due to its interest and its fun. This 'expansive' style is opposed to a 'defensive' learning style, i.e. an indifferent and ritual learning.

New Requirements in Job and Society

It is widely agreed that the information society needs new forms of learning, which can only be rendered possible by the new Information and Communication Technology (IT). The notion "information society" first of all described the changing employment structures in industrialised countries from 1950 onwards. As work in the tertiary sector expanded it became necessary for some employees in this sector 'to have to process some information more or less". More and more, one could thus use the expression "Information-Economy-Society"; see also the lately coined phrase "knowledge based economy". As new, i.e. digital, information and communication technologies were increasingly developed and extended, the 'information sector' was no longer restricted only to the tertiary sector, but was also applied to the second and even to the primary sector. Thus, the notion "information society" -as a whole and no longer as only a part of one single sector- includes today and in the future the services of IT and the recurrent use of information in order to cope with the new requirements in all jobs, in research and science, and increasingly also in everyday life and leisure time. This entails elementary consequences for learning and for professional qualification, which cannot be properly mastered without professional concepts for new media-based learning. The new requirements particularly arise from the following characteristics of the information society:

- Expansion of knowledge production
  Knowledge and sciences grow exponentially. Knowledge, also as a result of topically
  professional learning processes (lessons learned), is getting more and more important.

- Globalisation and mobility
  Due to a world-wide network both a global-economic and a personal competition are
  being created – for qualification, knowledge advantages, jobs. Real and virtual mobility of
  labour will intensify the pressure for competition.

- Knowledge is increasingly becoming a strategic resource
  Knowledge is being increasingly realised as a competition factor and is being professionally
  used in the context of 'knowledge management'. Some important aspects are the
  following: to generate permanently new knowledge, to transform personal knowledge into
  corporate knowledge and to transfer it through an effective network between persons
  having knowledge and those being in need of knowledge.

- Quick changing processes and an increasing complexity
  Society, economy and technology are changing within more and more shorter time periods.
  The 'half-life periods' of professional knowledge are becoming ever shorter. Increasingly,

more complex tasks and problems require ever more detailed specification in the context of knowledge and working methods, which have to be made available very soon.

- **High pressure of time and costs**
  To be quicker than others will become the decisive competition advantage. This will react upon the cost-benefit relation to further educational concepts.

- **Rise in qualification levels**
  Globalisation, quick technological developments and the necessity of a permanent up to dateness of knowledge for the fast-moving markets require an ever increasing level of qualification and will finally lead to ever higher standard profiles.

- **Necessity for lifelong learning**
  Professional qualification is being required from more and more people, a qualification that had not been known to them during their job training. They have to know almost perfectly those things that had not been taught to them (that could not have been taught to them). Thus, lifelong learning is the prime necessity. It requires the ability and readiness for one's own responsibility, determination and distribution of learning.

- **An ever increasing significance of the New (digital) Media**
  for the economy, science and culture
  In many areas it has become an indispensable key qualification to use the New Media effectively for analysing problems, for looking up information and for the organisation of knowledge and its use. The use of New Media in education and supplementary education furthers this ability by conveying media literacy (Media Literacy – see Lang 1998 b; pp. 278) and the learning of working techniques in networked learning surroundings.

Learning and Media

Learning is a comprehensive description for all processes of:

- the extension of point of views, insights, knowledge and abilities

- the display of basic knowledge and patterns of orientation

- the forming of attitudes, contents of meaning and the display of action

Brought down to the lowest common denominator:

- **Learning means generating knowledge from information.**

However, this procedure is highly complex and is by no means just a simple 'transfer'. Rather it means the 'deduction' and the 'construing' of knowledge. In this context 'information' and 'knowledge' are very closely connected to each other. To some extent, they are the two sides of the same coin: information is communicated knowledge – 'knowledge in action' (Kuhlen). Without knowledge there is no information – and vice versa. In general, the literature about 'knowledge management' describes 'information' at times as 'explicit' knowledge and that what is individually learnt from it as 'implicit' knowledge (Nonak/Takeuchi 1997). Explicit – stored – knowledge has an objectivized quality in contrast to the individual subjective quality of implicit knowledge. Therefore, learning is necessarily a dialogic process for the construction and re-construction of knowledge.

This point of view will be important in the further context of our subject matter for two reasons:

1) The quality of learning processes is directly dependent upon the organisation and management of communicating and offering explicit and implicit knowledge. The communicating approach or even the assigning approach in the sense of 'knowledge is power' have lost their validity in the information society. Knowledge is no final good that can be allotted according to the zero-sum principle: "I know more because you know less." In the future, it must rather be: "knowledge is communicable". Only through communicated knowledge can new knowledge spring up and only through its communication can it become a new, 'more' common knowledge. 'We know more because we communicate and share our knowledge'.

2) The organising possibilities of the media influence the quality-of-knowledge offers in a very decisive way. Not only do they have a transporting or packaging function, they also have a very decisive influence on the construing possibilities of knowledge. Therefore it is crucial if for instance linear printing media or hypermedial new media are used.

At this point I would like to mention a third concept that is the 'material' substance of information. Pieces of information are made up of 'data'. Data are at the lowest area in the hierarchy of the concept 'data-information-knowledge'. They are made up of individual elements of data, the signs. In general, data are considered to be neutral in terms of significance. Schoderbek et. al. (quoted in Sveiby 2000) describe data as a unit pulp without structure that would constantly be spat out by computers in large quantities. Data could be generated limitlessly. But they could also be stored systematically searched, updated and finally sorted out again. Data themselves do not have any significance. They attain their significance only through a clear reference that does structure them or they attain their significance in a certain context, in a certain situation. Thus they turn into pieces of information or news – you can understand them and you can act in accordance with one's doing, thinking and awareness. In comparison with data, pieces of information have a defining 'surplus value'. As to the generating of knowledge and learning, data in themselves are irrelevant. The data combinations that give information in a certain context are decisive. Thus it is not the data quantities that are decisive for learning, but the quality of the data that are made up of pieces of information and their communications. The easier, (computer-) technical handling of also complex quantities of data in digital form is however in so far of decisive importance as it has accordingly a bearing on the handling of information.

The Media has always and still do affect the communication of knowledge. It is not new that learning is media-protected. However, it are the media and the chances respectively that are new for the learning processes and their repercussions on them. Yet the word 'medium' is not clear (see for instance Faulstich 1998, pp.21):

- in its most simple basic meaning medium means 'means' or 'something that mediates'

- as a technical term, medium creates an analogous and at times metaphoric context – for instance music as a medium, light as medium, also a certain person as a medium. According to this understanding, many things can be understood as 'medium': the space-time situation, the subjective feeling, etc.

- in a more complex context of meaning, medium means 'an identifiable system' (for instance sign system, language system), 'a technical communication channel' (for instance 'medium television'), 'a totality of media' (for instance, 'mass media, New Media')

In media theory, the following, at first threefold, distinction has carried its point for quite some time in the context of information transfer (see for instance Lang, 1978, pp. 17):
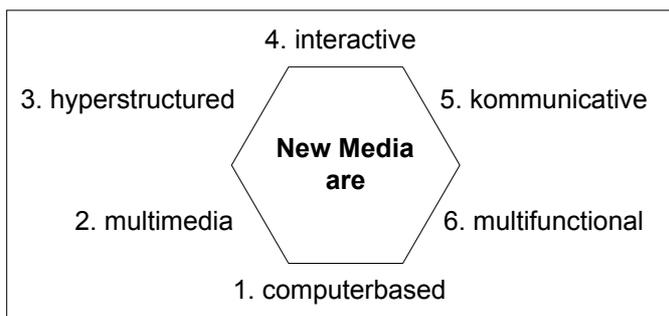
1) **Primary Media**
   no technology is necessary (for instance, means of interpersonal elementary contacts)

2) **Secondary Media**
   Technology is necessary on the part of the sender (for instance printing media)

3) **Tertiary Media**
   Technology is both a requirement on the part of the sender and on the part of the recipient (for instance TV). As a consequence of this differentiation, the following term has been newly coined:

4) **Quaternary** Media
   Technology is necessary for the digital distribution and reception of these pieces of information.
   What is more and very important, the one-sided sender-recipient relationship, which is typical of mass communication, is done away with (for instance online media – see Herget et al. 1999).

This fourth category characterises the New Media and the Multimedia. Both terms are widely used synonymously today. And when we speak of 'media-based learning' in a topical context, then we mean the assistance of learning processes by the New Media – or even the generating of a new quality of learning, a 'new learning', of a new learning culture generated by the particular quality of the New Media.

What is new with the New Media?

The term 'New Media' does not imply a hierarchic precedence of the new to the 'old' media or even their depreciation. New are rather the possibilities and chances that the New Media offer. Of course, the New Media allow in many areas a better solution to problems, which has not yet been possible in this form. However, this does not mean that the New Media are generally the better suited ones. Furthermore there are areas in which the old media are more effective. And there are also areas in which the old ones predominate very clearly. This means bringing in the various media always at that point where they respectively are more suited. In many cases, application areas are of such a kind in general practice that they can be most effectively mastered by the carefully directed use of both old and new media, consequently called 'media mix'.

The new thing about the New Media is that they are based on computer technology. On this technology its particular and new efficiency is based, which had not been possible by previous media. All the special characteristics of the New Media are derived from computer technology. Therefore they are also called 'electronic' or digital' media.

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                    4. interactive
3. hyperstructured                5. kommunicative
                  New Media
                     are
2. multimedia                     6. multifunctional
                  1. computerbased
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Graph 1: New Media

1) Computer-based

The developed computer technology and its further development are the decisive basis and condition for the New Media. The elemental characteristics here are: digitalisation of data. Only this digitalisation may render possible the high efficiency in the processing and integration of the brought-together data or data generated by the New Media.

Storing of data: The enormous quantity of data, which is caused by the integration of the various media, can only be meaningfully processed, inserted, checked up and evaluated by efficient storing facilities (see information retrieval). The efficient storing techniques imply data compression and decompression **Network of computer systems:** the communicative function of the New Media decisively depends on the possibility for information exchange with as many as possible potential sources of information and communication partners, i.e. on the network among them. But also the production and transmission of information are dependent on a reliable network of various sources and targets of information. The quality and efficiency of the network also decide about the technical quality of the New Media. But the fact of a – principally limitless – network is decisive for the generation of new learning processes. Only hereby a networked online learning or the bringing-together of distributed knowledge in a yet unknown efficiency can be rendered possible.

Platform-independent data exchange: This means the possibility of data exchange and the information and applications respectively, which are meant to be independent on the respectively used computer or application system.

Significance for media-based learning: efficient handling of big quantities of data and therefore of complex information, networked learning possible.

2) Multimedia

Multimedia means the integration of static and dynamic data. Static data are such data that do not change in the process of an application. They are therefore also called 'time-independent' or 'discrete' (text, chart, graph, still). On the other hand, dynamic data change in the process of an application and are therefore called 'time-dependent' or 'continual' data (sound/music, film/video, animation, simulation). However, this multimedia based data arrangement has been only made possible by the digitalisation and data management of computers. By its sheer lexical meaning, one might take 'multimedia' to be any combination of media. In literature, sometimes any medial addition or combination (for instance text & picture, motion picture & sound) is called (linear) 'multimedia'. In this context, it is also emphasised that, basically, 'multimedia' means nothing new. In order to find a defining clearness it is apt to use the term 'media mix' in this context, which can also be realised under usually technical conditions. Yet 'media mix' clearly differs from 'multimedia' in terms of quality and quantity in that it is a new medial arrangement or medium (see Lang 1998 a, pp. 297).

According to the current development multimedia do activate the

- **Visual communication channel** – also by way of colour and motion -,

- **Auditive communication channel**

- **Tactile/Haptic** (feel, grasp) – particularly in connection with the elements of in- and output.

As regards the olfactory communication channel (smell) only multimedia results have been made known. These findings, however, suggest in an interesting way that also other, not directly addressed senses may be stimulated and included in the communication by a particularly 'efficient' multimedia arrangement. That is those senses that are very closely connected with lively sensations and their intensive reciprocity to psychic feelings.

Significance for media-based learning: multimedia also assist the affective quality of information and communication, which makes it more attractive. The higher density of information allows for a more efficient learning performance, which can be neurologically explained as follows: one half of the human brain is normally dominant in terms of speaking. It works analytically sequential. The other half of the brain works graphically comprehensive. With consistently textual, visual and auditive information at hand at the same time, both hemispheres are fully occupied with the processing of information and the generation of knowledge.

3) Hyperstructured

This means that pieces of information are organised according to a 'hyper-text'. The functioning of a hypertext is based on a basic idea for a modern information system. This idea had already been developed in 1945. The associative functioning methods of the human brain served as a model. It was only in the development of the computer technology that this idea could be realised. Around 1965 Ted Nelson coined the term 'hypertext' for such computer-based information systems (see Nelson 1974).

In contrast to usual texts, hyper-texts (hyper = over, here also multidimensional) are not linear-hierarchically structured but describe a non-sequential form of writing and reading. Each text segment is connected with a more or less big quantity of further text segments. In terms of their information value, the text elements are thus respectively completed by 'over'- texts (also called meta-texts) and they are in themselves hypertexts for other text elements of the system. Modern hyper-rmedial information systems no longer entirely consist of text segments alone but they consist also of visual and, should the occasion arise, animated information segments (picture, film video, simulation) and auditive segments (spoken texts, sounds, music). To each and about each information segment there are connections with other information segments. The individual segments – also called 'nodes' or 'documents' – are neither arranged one over the other nor one after the other. At best they form topical clusters amidst which one can 'jump' arbitrarily. Therefore, hyper-media systems can also be completed, expanded and modified with regard to their content at any time without the need to exchange the whole system.

Thus a multidimensional and dynamic information room is created that has principally no beginning and no end but – principally arbitrary – 'starting points'. Hypermedial information systems can be endlessly re-centred, i.e. new centres for information tracking can be created time and again. Thus, one can enter the multidimensional information room, which has been formed by hyper-structure, at that point where the topical information requirements seem to make it necessary respectively.

Significance for media-based learning: Amongst other things, people differ from their individual knowledge at hand, from their information requirements with regard to the situation and interest, and from the way in which they look for information and absorb it. The functioning of the human brain does not follow any linear pattern but happens in highly complex networks of neurones. Because of this functioning of human thinking and its learning and perception processes, the hypothesis has been drawn that pieces of information can be particularly well absorbed at a time when they are modelled on the structure of the human brain both in their organisation and presentation.

4) Interactive

The information flow between user and system is bi-directional (back channel). The system control by the user is basically rendered possible by the according interfaces and implemented navigational and orientation boards. In addition to this, an interaction between user and content is rendered possible in the ongoing multimedia development. This content interaction is closer to the main significance of 'interactive' than to the mere 'interaction' within the system. The latter one, however, is the prerequisite for content interaction.

Significance for media-based learning: The interaction enables the learner to influence her/his learning methods and learning tempo. Expansive, discovering and self-controlled learning guarantees a high learning effect and at the same time a certain stability of learning motivation.

5) Communicative

The information prepared for the New Media can be – synchronized or asynchronized – mutually exchanged between spatial-chronologically distributed user groups with common working and/or leisure and/or consumer interests and can also be changed in their respective sense. The user may flexibly change the perspective; the rigid casting assignment – only 'sender' or only 'recipient' of information – is done away with in the context of multimedia. This dialogic principle comes close to a revolutionary innovation: Due to the principally possible two-way communication via the New Media the Bertolt Brecht claim is made redeemable: From distributed information a new communication is created! All previous attempts to create mass communication communicatively fail due to the back capacity (back channel), which is insufficiently on hand. Communication arrangements in the New Media render it possible for the first time to generate knowledge information from the mere distribution of information, i.e. communication in its proper sense. In this connection the communication relationships may vary between

one person   ↔   one person

one person   ↔   many persons

many persons   ↔   one person

Significance for media-based learning: as already mentioned above a communicative information sequence generates a particularly effective learning situation. Dialogic communication allows for the exchange of complex knowledge supplies because the respective recipient – in 'real time' – turns into the sender. Thus she/he may ask again, make a statement or paraphrase, etc. Information becomes more precise and 'tailor-made' for the respective situation: this is an advantage that the information via printed media and mass media lacks.

6) Multifunctional

Within the New Media, media-conform and thus principally multimedial information has a higher information density, a more complex impression quality and therefore a more informative surplus value in comparison with unimedia. Complex statements may be presented more authentically, closer to reality and in different levels of abstraction and perspectives. By the simultaneous addressing of various senses the availability of knowledge will be increased. Closely connected is at the same time the affective charging of the multimedia information offer, which makes it seem more varied, interesting and attractive. Thus they appear as information, that not only offers knowledge but also is fun (see also 'edutainment', 'infotainment').

Significance for media-based learning: (lifelong) Learning must also be fun.

Closeness and Distance

As to the closeness and distance of learner and teacher and the hereby-caused typical media assistance, one can basically differentiate between three or rather four learning domains:
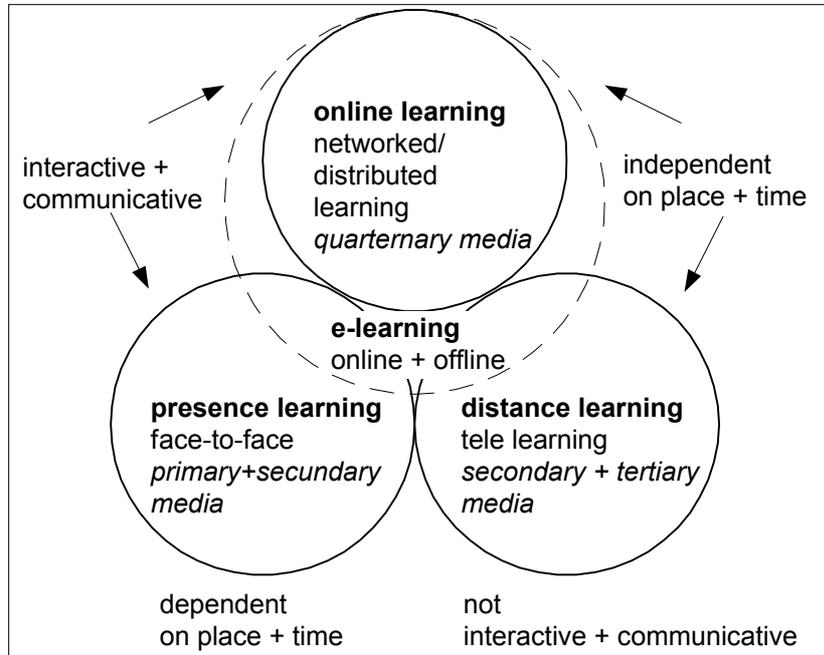
Graph 2: Learning Domains

Historically speaking, **presence learning** came up when medial buffer stores for information, for instance books, had not yet been at one's disposal or only for a few one. Teachers and learners had to come together for communicating knowledge. The classic 'lecture' is the prototype of face-to-face learning (f2f learning; see Seufert et al. 2001; pp. 25). Simultaneous meetings at certain places are not only expensive and time intensive. Such learning processes generally disclose a high extent of outside control. Ritual learning or 'learning in step' are all too often the consequence (see Arnold/Schüssler 1998; pp. 94).

There is no need for this. For f2f-learnig situations have high extents of interactive and communicative potentials. They are made use of in for instance group discussions, brain storming, in quality circles or in coaching situations – and also particularly in times of electronic media. Presence learning is clearly dominated by primary media, which are nowadays assisted more and more by presentation media – secondary (see chart), tertiary (for instance instructional film) and quaternary like for instance PowerPoint or online presentations.

Due to the basic place and time similarity of such learning situations, presence learning is becoming less and less apt for many corporate supplementary education measures.

Distance learning in the form of correspondence courses, television or broadcasting courses goes back to the possibility of the space-chronological decouplement of the didactic triangle teachers – learning objective – learners (see Arnold/Schüssler 1998, p. 95) because of the common availability of medial information stores (books, scripts, newspapers). Distance learning in general demands higher requirements for the ability of self-controlled learning and is not bound by time or place. This means that it is more flexible and cheaper. Distance learning is based on the input of secondary (for instance correspondence lessons), tertiary (for instance sound or video cassettes) and lately also of quaternary media (for instance multimedial learning programmes on CD ROM). Television in its current form decisively lacks a communicative dimension, which interferes with a dialogic generating of knowledge. For this reason correspondence courses are often combined with study circles (presence learning).

Within **online learning**, primary elements of presence and distance learning are combined: they are independent of place and time, interactive/communicative and very quickly available. In spite of this – professionally organised – online learning presents not only a mixed form of presence and distance

learning. Online learning is exclusively based on networked quaternary, i.e. electronic, media or New Media, which allows for a new form of learning in its own right. Online media therefore requires a new form of information and communication design (see Lang 1998 a; p. 302). The 'scanning' or transfer of old contents from the old media with regard to the New Media is not only 'not in accordance with the media', it also does not utilise their capacity to the full by far.

Online learning requires a high measure of self-control on the part of the learners. The form of 'distributed learning' or 'collaborative learning' in 'learning communities' is characteristic of this (see Seufert et al. 2001; p. 27). As the network is generally supplied by the Internet – or by corporate internal intranets, which make use of the Internet technology – online learning is also called WBT (web-based training).

Online learning gets its real meaning in the context of professional learning through a deliberate concept, which makes good use of its potentials and its integration in corporate ideas and systems of knowledge management. Only in this context can expenses and profits be properly assessed.

E-learning refers to the input of exclusively electronic learning media. This means all computer-based media, i.e. the New Media, wherefore the term CBT (computer-based training) was coined. So far e-learning is identical with the term online learning, but it also implies the so-called electronic offline media. Meant are particular learning programmes on CD ROM but also for instance PowerPoint presentations or similar programmes. The differentiation between offline and online was originally very useful with regard to the limited transfer capacity of online networks. Data intensive applications with for instance video sequences and similar sequences were only meaningful as offline applications (on CD ROM). But in the meantime there are so-called 'hybrid' applications where the data-intensive basic application is stored on data mediums and where the current up-to-dateness and network and dialogisation happen online. Furthermore, the differentiation between offline and online increasingly loses its importance in the course of the development and expansion of ever more efficient wide-stripped high-speed networks. Insofar it also seems justified to use online learning and e-learning often synonymously.

As graph 2 shows, online learning is always also e-learning, but e-learning is not exclusively online learning although e-learning is nowadays conceptually equal to online learning.

Professional E-Learning

A particular advantage and a typical characteristic of e-learning systems is that they are modularly structured or that they can be modularly built up and extended. This makes them very flexible, they can be easily inserted into existing learning systems or they can be completed with them. And even complex e-learning systems can be relatively easy looked after and permanently adapted to technological developments.

Yet it also leads up to the fact that individual modules that can only become fully effective in a learning system also act as single learning elements and can eventually not reach their proper efficiency.
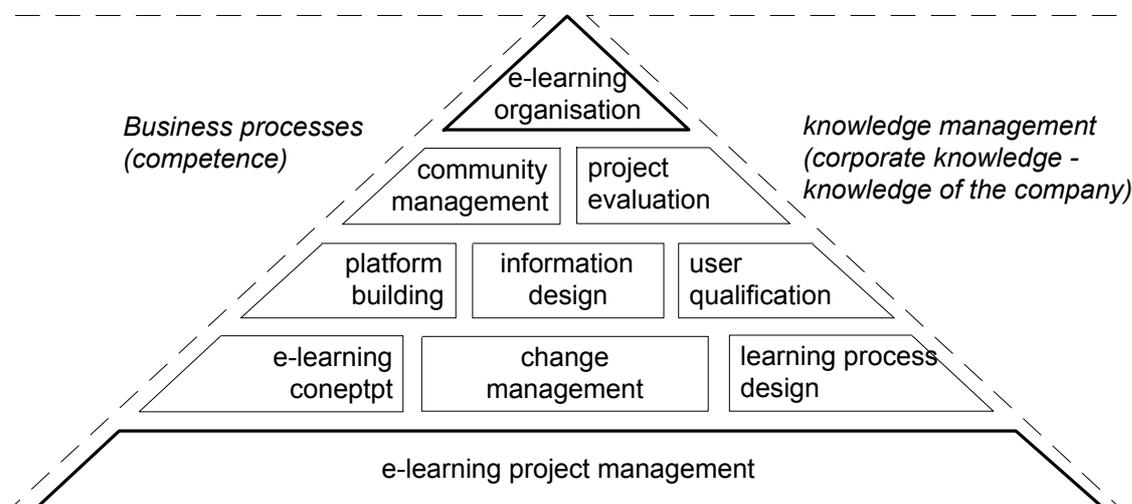
Graph 3: E-Learning Solution for Companies

The potentials of online or e-learning will only be fully revealed if they are professionally formulated and effectively involved in the business processes on the one hand and in the knowledge management system on the other hand. As an example may serve the e-learning solution from Athemia, as outlined in graph 3.

The subsystems of this model are more or less in themselves differentiated again. The Athemia* Online Learning Platform for instance involves the following services:

Mail: personal surroundings for news, documents, etc.

Information: data bases and information retrievals with online editorial systems

Working groups: online groupware services for predefined, single-minded learning communities

Discussion: online communication platform for subject matter-orientated, spontaneously called-in learning communities

Searching services: navigational assistance and searching tools for online contents

Teaching means: depository system for teaching means with password-controlled access

Training: online assessment tool for question-based training with self-correction

Learning: learning plan and learning control

Examination: on/offline assessment tool for question-based examining and outside correction

Virtual café: relaxing area, easy communication

For such an elaborated and differentiated media system the users have to be made qualified. In the same way as one learns reading and writing at first in order to be able to use printed teaching media, there is a need for a 'secondary alphabetisation' for electronic media in order to appropriate the required Media Literacy to oneself (see Lang 1998 b, p. 278). The efficiency and efficacy of online learning systems do not least result from the distributed learning in learning communities. These are new learning ways in virtual rooms. They serve as an immersion of learning and knowledge and the work in groups for the discussion and clarification of possible questions. Such communities not only have to be provided for or made possible, they also have to be looked after and, if need be, moderated. That they additionally come into existence very spontaneously is not least based on the growing media literacy of the users and the specific learning culture in such systems.

Learning in communities – an new learning culture

As a good example of the efficiency of 'distributed' learning or of learning communities serves the McKinsey principle that is applied similarly or in the same way by other consulting firms. Their most important 'capital' is the collected knowledge of all employees from the individual consulting projects. The McKinsey consultants have developed an ingenious and very efficient system of knowledge management that is based on the New Media. All relevant knowledge of daily work flows into this system. Each McKinsey consultant has – via the Internet – always worldwide access to this common 'knowledge treasure' and may immediately gather what knowledge she/he may need for a topical problem. This gives her/him generally an enormous knowledge advantage as far as competition is concerned. McKinsey's secret of success is not least based on this concept (see The Economist 2001, p. 85), i.e. to be excellent and quick. This system is still 'stopped' by the fact that, if required, the respective experts may be asked entirely straightforward, personal questions over the world-wide corporate-intern intranet – questions that have to be answered or discussed quickly. The professional system of the media-based information exchange (explicit knowledge) is furthermore refined by the additional possibility of – media-based – dialogic knowledge generation (implicit knowledge).

Such systems obtain their power from mainly two basic conditions:

1) Each user must be convinced of the fact that the pool of common knowledge is dependent on her/his readiness to insert her/his amount of knowledge: the more each individual

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* Athemia is a spin off of a well-respected company with much experience in distance learning. Athemia offers comprehensive e-learning solutions for companies, governments and for the educational sector.

inserts, the more knowledge is at everybody's disposal. The attitude 'I keep my knowledge back so that I know more than the other', according to the motto 'knowledge is power', would be as foolish as dysfunctional since the knowledge pool can only be as good as all take part of it and since one gets very quickly excluded from the community by a 'refusal attitude'.

2) In order for the systems to be useful competent, committed and self-motivated people are required. In order to gain profit from this system an 'expansive' learning style is necessary. One gathers information, one learns because one wants to know it and one wants to get down at the bottom of a thing.

This example shows that the new requirements for learning also require a new learning culture. It is true that the term 'learning culture' is not unanimously defined. But in analogy to a comprehensive understanding of culture one might take this to be the totality of all arranged learning situations:

- the organisation of learning

- the involved persons and their understanding of learning

- the totality of the learning offer

- the learning possibilities

- the learning media

Ivan Illich, a committed education politician and philosopher, used impressing metaphors for two opposite learning cultures at the beginning of the 70s of the last century:

- the 'funnel' for the traditional, 'overschooled' learning culture, as he called it

- the 'web' for the new, aimed-at learning culture.

In fact, Illich already used the term 'web', not in the technical sense of www as we do it today, but also in the sense of 'net', 'network' of distributed learning (see Illich 1973, p. 85). He was enthusiastic about the idea of a 'stock exchange' or a 'bank' where those who pay in knowledge may also withdraw knowledge. This is done in accordance with the principle 'everyone has knowledge that may also be useful for others and everybody is dependent on everybody else's knowledge'. Although Illich already pointed at the significance of modern technology in the context of the knowledge distribution – at one point even at computers (Illich 1973, p. 35) – it was not clear up to the development of the New Media how to realise one's 'revolutionary' idea of a world-wide knowledge (data) bank or of a knowledge market-place in terms of medial appropriateness. However, Illich mentioned the decisive hint that people would have to be made aware of a learning culture if the great possibilities of the New Media were to be used. Today this is truer than at any other time: only those persons who communicate their knowledge to others will benefit from other people's knowledge.

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Norbert Lang
Prof. Dr. rer. soc., M.A.
Sociology; Communication & Media

OFFICE:	PRIVATE:
University of Applied Sciences	Steisslinger Strasse 30 - D-78333 Stockach
FH Lueneburg - Fb S & Multimedia Informatik	Phone: +49 (0)77 71-49 55
Rotenbleicher Weg - D-21335 Lueneburg	Mobile: +49 (0)177-49 55 000
Phone: +49 (0)41 31-714-836 /-860	Fax: +49 (0)177-99-49 55 000
Fax: +49 (0)41 31-714 811	

E-MAIL: lang@fhnon.de   lang@imac.de   norbert.lang@uni-konstanz.de

URL: www.fhnon.de/u/lang/www/   (Homepage)   www.socioweb.de   (Web based training)