

Review of literature in German language on learning to learn competence development

Klaus Reich
Institute of Educational Science, University of Innsbruck
February 2009

This literature review has been produced within the framework provided by Helmut Fennes from the Institute of Educational Science, University of Innsbruck. It is primarily based on available research (books, articles, conference proceedings etc.) published during the past 5 to 10 years (where relevant, literature published earlier is included as well).

This document has been produced in the framework of the two-year LEARNING TO LEARN project (L2L) which has been funded with support from the European Commission (project number 141973-LLP-1-2008-1-DE-GRUNDTVIG-GMP).

This document reflects the views only of its author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

1 Introduction

The knowledge and information society challenges the readiness and skills of people for lifelong learning. At European level, lifelong learning has been declared to be a transversal goal of education, training and employment policies, e.g. in the memorandum on lifelong learning (European Commission 2000) and as guiding principle for general and vocational training. The discourse at European level has its continuation at national level and many of the suggestions made in the memorandum have given important stimuli for the development of educational policies in the German speaking countries (esp. Germany and Austria).

Learning has to be understood as a chance for social participation as well as a necessity for work, societal and individual development. All people are learning – consciously or unconsciously – during their whole lives (Dohmen 2001) and learning is less and less taking place in classrooms or seminar rooms, at least when talking about adult learning. Therefore, lifelong learning needs to take into account as well the combination of formal, non-formal and informal learning processes. Focussing on the needs of vocational education and training, the support for lifelong learning and the development of the relevant competences is at the centre of the attention. The actual challenge is to break down the overall idea of lifelong learning into clearly defined objectives and concrete steps for practical application.

Self-regulated – or self-directed – learning is the quality of learning that enables individuals to decide independently and autonomously whether they want to learn, what they want to learn, how intensely they would like to learn, when and where they would like to learn and whom they would like to have as their counsellors when having learning problems. Besides the readiness for learning, people need the relevant skills and competences for learning as well. These dispositions of the individual in their mutual interrelations are described as self-learning competences (Kruse and Wiesner 2002). These competences mark basic prerequisites for adult learners to be able for lifelong and self-regulated learning. One starting point for successful support methods and strategies for self-regulated learning is the statement made by Holzkamp (2003) that learners only learn, when they personally value the contents of what they intend to learn, i.e. when they have subjectively acknowledged the importance of that specific learning objective. Starting from this perception it becomes obvious that the personal motivation of the learner connected to available instruction is a prerequisite for successful learning of adults.

One of the challenges of self-regulated learning and the identification of the necessary learning competence is marked by the critics that the consideration of self-regulated learning in recent research does not add significantly to results of the reform pedagogy. Due to a lack of empirical research Kruse and Wiesner (2002) conclude that it is not possible to argue against or in favour of these critics. The observed lack of empirical research is resulting in a lack of academic literature on the development of (self-regulated) learning competences, especially in the German speaking scientific community.

There is a certain agreement in the scientific community that the individual has to be enabled to shape interesting question and problems, identify the adequate information sources needed for the solution and be able to select out of a multitude of information what is relevant and/or necessary to

solve problems or answer questions. How the relevant learning competences can be developed by the (adult) learners is hardly addressed by the German speaking scientific community.

One strand of research is emerging from the overall competence and competence development discussion. Another strand of research is rooted in research on learning at the work place, where especially business pedagogues have been active. In recent years some projects (e.g. in the EUQAL programme) have been focussing on the needs of people deprived from education, but research results are focused on very concrete and limited contexts¹. Overall, most often learning to learn competences are outlined in general guidelines, support documents, manuals etc. as assistance for learners, especially for students and pupils. These documents, most often lack a research foundation.

2 DEFINITIONS, CONCEPTS AND THEORIES OF LEARNING COMPETENCE

Hofmann (2000) identifies a common sense among different research fields in pedagogy that young people and adults have to become experienced learners. The development of learning competence has gained importance through the last three to four decades. On the one side, researchers and practitioners in adult education taking a humanistic position point out that learning competence is an essential element in adult education. On the other side, learning competence is seen in view of economic aspects for utilisation at work and finally for profit maximisation. The esteem given to learning competence is founded in the conviction that this competence is an important contribution to individual life and to the preservation and improvement of a democratic society.

Although there is a more or less common agreement on the benefits of learning competence, the theoretical foundations as well as plausible suggestions for the development of learning to learn competences differ considerably.

One of the roots of the understanding of learning competence can be seen in the concept of key qualifications but those have been criticised, to be too little grounded in psychology and anthropology, which is resulting in difficulties when thinking about possible didactic approaches. On that basis, Hofmann (2000) points out the positive results made by implementing research findings from transfer and metacognitive research in educational concepts. Hofmann (2000) additionally describes a set of advantages of self-organised learning but highlights as well the limits of it: for the development of learning competence it is not enough to leave the learner alone in organising his/her learning processes, for instance in relying on informal learning only. For Hofmann (2000) it is essential that learners need targeted and well planned interventions by trainers and evaluation of the effects that those have.

North, Friedrich and Lantz (2006) start from the proposition that competence may be developed by reflecting experiences and/or other learning processes and conclude that different levels of competence may be recognised or measured. The development process from one level of competence to a higher one, leads them to the question whether this is expressed in activities and whether this step may be described with the terms learning competence or change competence. In addition they express their uncertainty whether this is a facet of self-organisation competence, and

¹ e.g. ADVOCATE project: further training for people deprived from education <http://content.tibs.at/advocate/>

especially of self-organised learning, in the sense of Erpenbeck and Heyse (1999), i.e. as a disposition (skill, readiness, ability) to act self-organised.

Learning competence is also described as a meta-competence as it is a competence independent from specific contents (Weinert 1999). Learning competence is as well seen as the ability for successful learning based on the competence for self-regulation and competence for cooperation (Mandl and Krause 2001).

Mandl and Krause identify different processes constituting learning:

- Learning as an active process: learning is only possible with an active participation of the learner. For this activity the learner needs learning motivation respectively interest in the process or the topic of learning.
- Learning as self-organised process: learning demands for a participation of the person. The degree of self-regulation and control of the individual learning process is depending on the learning situation and learning environment; knowledge construction without self-regulation is not possible according to Mandl and Krause.
- Learning as a constructive process: knowledge is constructed and new knowledge can only be gathered and used if it is implemented in the existing knowledge structure and is interpreted on the basis of the individual experiences.
- Learning as a situated process: knowledge construction is taking place in specific contexts and is linked to them. The disentanglement of knowledge from the context (decontextualisation), which is facilitating the application of knowledge in other contexts, cannot be taken for granted but has to be systematically supported.
- Learning as a social process: knowledge acquisition cannot be reduced to an individual construction process but is based on socio-cultural conditions and often takes place in public space. Therefore, Mandl and Krause conclude that learning is as well a social process.

Competence is the ability for successful action. Accordingly, learning competence is the ability for successful learning-activities, the ability to achieve a learning performance. Learning performance is not only depending on the learning abilities but as well on the willingness and motivation for learning. Mandl and Krause observe a mutual interdependence between competence, performance and motivation.

In his study on the topic of lifelong learning and work, Baethge (2003) states that work is a formative factor for the development of learning competences in adult life. This understanding is based on a new type of self-organised learning, composed of the ability for anticipation, activities for competence development and the disposition for self-regulation. The disposition for self-regulation according to Baethge (2003) is the skill and willingness for self-regulation and self-organisation of learning. In this study Baethge as well points out the important role of work experience, especially the chosen organisation of work, which has a great influence on the learning and how supportive the learning environment is.

Informal learning, as for instance taking place in working contexts, has drawn a lot of attention in research in recent years. Nevertheless, educational researchers do not have a common understanding of informal learning. In the German speaking research community, Dohmen (2001) suggests to understand informal learning as all self-learning, which is emerging in living and

experience contexts outside formal education. Overwien (2001) highlights the methodical difficulties of researching informal learning and, therefore, argues for an interdisciplinary view on the subject. Besides research done in the fields of pedagogy, ethnology and anthropology (especially focussing on the cultural conditionality of learning) as well as psychology (especially in the fields of incidental learning, social learning, self-regulation and motivation) have contributed to progress in understanding informal learning. In addition research results from culture, cognition and socialisation can be considered.

In the German scientific community, the view on learning of adults has made a shift from a primarily participant oriented view (until the mid 1990ies) to a more subjective view (cf. Faulstich and Ludwig 2004; Overwien 2003; Arnold and Schüßler 2003; etc.). In conjunction with this, the interest in the role of the learner is based on the influence of moderate constructivist theories which highlight that learning is not per se the result of training processes. Kirchhof (2007) adds that the subject based learning theory of the psychologist Holzkamp (e.g. Holzkamp 1993) and the adult pedagogy of Meuelers (2003) point – often implicitly – towards informal learning contexts.

While not the whole spectrum of informal learning processes is resulting in competence development, Kirchhof (2007) argues that the fulfilment of daily challenges in life does offer potentials that may provoke and support learning processes resulting in competence development. In this sense, Dohmen (2001) states that especially informal learning can be characterised as supportive for learning resulting in competence development as it integrates the incidental, experience based and self-organised learning in an integrative construct. A prerequisite for such a form of competence development is that informal learning deviates from authentic learning and working contexts, which again require activities and thus generate individual competencies.

Kirchhof (2007) observes that different aspects of the personality of an individual are determining the quality of informal learning: learning competence, learning motivation and self-concept. With respect to learning competence he points out the importance of self-reflection, communicative orientation and the ability for anticipation, which are co-determining the competence for informal learning. For informal learning, motivation, i.e. the intention to learn, is not required, but is linked to the intention to become involved in certain activities, i.e. the motivation to do something specific. Fundamentally the structure of the environment is shaping the learning motivation. According to Kirchhof (2007) this includes a certain disposition of the individual to get active and the respective self concept. Self-concept, including body scheme, self understanding and self ideal (who I am, who I would like to be) as well as the perception of an identity ascribed by others, has an impact on self-esteem (and complex mental conditions) and, therefore, on the organisation of informal learning. Performance is often more dependent on this self-concept rather than on the actual preconditions. Kirchhöfer (2001) points out the important role of the biography of the learner in relation to informal learning:

- Informal learning is based on the mental dispositions developed through one's biography – accordingly, the competence for self-regulation has an individual history.
- Informal learning is using prior experiences in learning, the learning biography of the individual, which is influencing motivation and organisation of the actual learning.
- Informal learning is routed in the whole biography of the individual and cannot be derived from the experiences in one life sphere, i.e. work.

- Informal learning is determined by biographical options, i.e. especially expectations and wishes on future working environments and career development are influencing the motivation for informal learning.

Kirchhof (2007) sums up that the basic potential opportunities of informal learning are situated within a mutual relationship between inner and outer preconditions. The specific circumstances of the living and working environment are influencing the specific conditions of informal learning as well as the personal and biographic structure of the individual. The degree of learning stimulation, supportive learning structures by the environment and motivational, cognitive as well as reflexive competences of the individual are determining the possibilities and limitations to identify learning opportunities within the surrounding environment and use those as resources for informal learning. Kirchhof is aware that these questions point towards the danger of social selectivity, by which the social background and the belonging to certain social classes are determining educational chances. He thinks that a huge proportion of the society cannot cope with the demands for informal learning, especially when its potential for competence development is considered. Therefore, those groups of persons are favoured, who have had the chances to develop a certain disposition for learning. On that basis, the question what the prerequisites for successful informal learning for as many people as possible are and how these can be effectively developed becomes eminent.

Self-regulation competence is a basic element of learning competence since learning is an active-construction process. The acquisition of knowledge and skills is not possible without a minimum of self-regulation (Reinmann-Rothmeier and Mandl 1998). Decisions on aims and strategies of learning are increasing with age and level of education and thus are having an impact on the importance of self-regulation competences as well. Finally, self-regulation allows reacting flexibly to new demands of the knowledge society and personal development. Learning is self-regulated if the actor can make the essential decisions on time, place, strategies, aims, contents, etc. of learning and can positively influence them. According to Mandl and Krause (2001), self-regulated learning requires metacognitive skills but is as well dependent on motivational factors. Learners have to be able

- to prepare learning: planning and preparation of the own learning process needs different strategies. The learner has to formulate learning aims, plan learning times, set priorities and as well plan breaks and changing working styles. Furthermore learners have to be able to activate attention and remember prior learning processes and existing knowledge.
- to actually learn: for the actual learning process the learner needs strategies for processing the relevant information and has to be able to connect information with existing knowledge and experiences, and on that basis transfer it into individual knowledge. This can be done, for instance, through the generation of visual images or by searching for concrete examples. Furthermore learners need to be able to reduce the acquired knowledge to the essential elements and structure it meaningfully.
- to regulate learning: monitoring the learning process is an essential element of self-regulated learning. The learner has to be able to control the attention, select adequate learning strategies, identify errors, analyse difficulties and their causes and adapt learning activities accordingly. Metacognitive control strategies as well as reflective skills are of importance.
- to evaluate learning outcomes: for the evaluation of learning outcomes learners need to be able to compare their results with the learning aims and to give feedback on the learning process and results to him-/herself. For identifying gaps in one's knowledge strategies like repeating the learned information can be used.

- to maintain motivation and concentration: besides cognitive and metacognitive skills, learning motivation has a central role in self-regulated learning. In order to maintain learning motivation learners need to be able to control their feeling, handle success and disappointments appropriately and delay wishes and desires that are not linked to the intended learning aims.

Mielke (2001) states that effective learning and thinking is based on knowledge and strategies that help to control and evaluate the learning and thinking process. Furthermore, he points out the concept of metacognition. The term metacognition was coined by Flavell (1979) pointing towards two different understandings: metacognitive knowledge about oneself as well as the knowledge about cognitive abilities in different fields. Metacognitive knowledge of different tasks refers to the knowledge of the degree of difficulty and different challenges of tasks. Finally metacognitive knowledge refers as well to the knowledge of the person about different learning strategies. This includes the competence to decide which learning strategies are adequate for which type of tasks. Overall, metacognitive knowledge includes knowledge

- about the own person, including an evaluation of the cognitive performance in different fields (reading, writing, calculating);
- about the tasks, including knowledge on the level of difficulty and the type of challenge of the tasks;
- about learning strategies, including knowledge about learning techniques and possibilities of their application in order to achieve certain learning aims.

According to Mielke (2001) metacognitive control includes three different components: Planning, monitoring and regulation:

Planning of learning includes the definition of learning aims, the formulation of learning questions and the identification of the requirements of the task. These activities help to specify certain strategies and to activate appropriate existing knowledge for the learning task.

Monitoring of learning includes all cognitive activities controlling the learning process per se. This includes the steering of attention on the learning material, the formulation of questions and the assessment whether the learning material has been understood.

Regulation of learning includes the activities aiming at the fitting of the actual learning activities to the challenges of the specific task and solving arising problems. Regulation is dependent on ongoing observation and evaluation of the learning process in order to identify irregularities. If the ongoing monitoring of the learning process identifies a certain problem, specific activities are started to solve the problem, e.g. problems of understanding, by looking up the term in a dictionary or an encyclopaedia. Metacognitive control can result in a cognitive overload negatively influencing the processing of information. This may happen if basic processes cannot be adequately handled and additional metacognitive activity is resulting in a divide of the attention, i.e. the metacognitive process is rather disturbing than supporting the learning process. As Mielke states, in many cases metacognitivity is supporting the learning process.

Furthermore, Mielke points out that strategies related to the management of the resources relevant for learning and the establishment of the learning environment, e.g. place and time for learning, are only indirectly affecting the learning process. These include

- the design of the learning environment (avoiding disturbances)
- collaborative learning with other learners
- search for help from others
- problem solving by using additional literature
- investment of efforts (persistence, intensity of cognitive/metacognitive strategies)
- time management.

These strategies are useful to provide respectively organise the relevant resources enabling or supporting the application of strategies directly influencing the learning process. Mielke states that the differentiation between direct and indirect strategies is often difficult since, for instance, time management has metacognitive aspects as well.

3 THEORIES ON HOW LEARNING COMPETENCE IS DEVELOPED

Hofmann (2000) poses the basic question, whether it is possible to train or teach learning at all. On the basis of the different fields of science taken into consideration he describes a set of possible answers. However, he concludes that the increase in learning competence has been recognised as an important aim in different scientific disciplines. He identifies the following different factors concerning the development of learning competence that need to be observed:

- the development of a cognitive structure with a high degree of differentiation and support for metacognitive competence has the effect that advanced learners (having more learning competence) are advantaged compared to those with less learning competence;
- the development of learning strategies as well as the reflection on experiences when these learning strategies have been (more or less successfully) applied;
- the use of explorative learning strategies has to be handled carefully and needs to take into account the inner differentiation of the group, i.e. persons motivated for learning and those afraid of failures, as these groups differ considerably in their development process towards increased learning competence;
- assistance in the development of a positive motivational readiness for learning, which is especially important for people having unsuccessful learning experiences;
- a certain quality of assistance from the trainer for people working in phases of individual work: during phases of explorative learning the learners should only be counselled and supported in recognising their next step in the development process.

Overall, Hofmann concludes that for the practical application of different factors that support the development of learning competence hardly any didactic recommendations have been developed. This is especially true for the factors, which may be ascribed to the field of metacognition (e.g. development of a differentiated cognitive structure, learning and application of learning strategies and reflection on practical experience).

Arnold (2002) identifies the didactic arrangement for the acquisition/application of knowledge respectively the learning culture as the central enabling cause for the development of problem solving and problem designing competence. He argues that the logic of learning is anticipating the logic of self-regulated problem solving in order to avoid the contradictions of traditional teaching/training organisation (externally regulated knowledge acquisition for self-regulated knowledge application), which is characterising existing institutions as well as the self concept of adult education. On that basis he demands for an educational practice focussing on the consideration of methods for the development of learning competence. The learners need to be trained in methods of self-regulated learning and he warns not to limit the methodological approaches to the selection of the adequate teaching method. Therefore, Arnold identifies the methodological repertoire, respectively the systematic support of self-learning competences as the central aim of any further development of the overall learning cultures.

Tippelt (2002) is arguing in the line with Arnold by stating that successful competence transfer needs strategies for lifelong learning as well as the transfer of activity-oriented competences. Institutional formal and decentralised informal learning have to be coordinated and a change in the practice of learning as well as the theoretical understanding of learning needs to be formulated. In order to root sets of competences relevant for qualification in the curricula and in the learning process he suggests to apply meaningful learning, learning relevant for application, abstracting and in parallel automating learning, independent and tutored learning as well as cooperative and individual learning. Learning understood as active, self-regulated, constructive and situated social process merges the transfer of competences with the aim of education: education and the transfer of competences should develop basic skills and professional knowledge, support the development of the personality and improve interdisciplinary learning competences. Education understood in that sense demands for a new understanding of learning using problem-oriented learning environments. Within those it is possible to

- learn based on authentic problems,
- learn in multiple contexts (in order to apply knowledge in different situations),
- learn in social contexts (in order to support problem solving thinking and acting),
- learn with instructional support (in order to learn with guidance effective problem solving and the development of knowledge),
- learn by using new media,

in order to be able to make use of all forms of self-regulation strategies.

Kruse and Wiesner (2002) analysed how learners themselves judged their learning competences and which subjective assessment of their learning experiences adult learners make in their present learning situation. Their theoretical preliminary considerations are rooted in the

- understanding of learning of Friedrich and Mandl (1990), who describe the learning process as a process including a definition of the learning aim, learning coordination, learning organisation, and information processing;
- activity-regulating subjective theories of Holzkamp (2003)
- and conceptions of a moderate constructivism.

The results of their study led them to a series of suggestion for the support of self-regulated learning: One important result is that the readiness for self-regulated learning was present for most of the participants (altogether 62 persons) and, therefore, can be considered to be an important basic

requirement for successful learning. Furthermore, emotion-related learning factors, the learning climate as well as the social context have shown to be important factors for adult learners. The participants of the study also expressed the relevance of learning in a group (support has been given by the trainers as well as by other learners in order to solve specific tasks). The implementation of new knowledge in existing activities and processing structures is fostered, if the individual dispositions allows for that. This is also true for the expansion of (self-) learning competences: according to Kruse and Wiesner (2002) further learning is only initiated if new information is linked with own considerations, resulting in changes of activities. They conclude that the task of the trainers is to support the learners to critically reflect on their own learning biography and recognise behaviour and value orientations that are rooted within their biography. Learners need to be able to realistically assess the individual level of learning competence in order to identify possibilities for their deepening and broadening. Trainers have an active role in the analysis, design, organisation and steering of training processes. They are experienced learning counsellors/coaches through the training as well as in the overall development process of learning to learn competence. In the study of Kruse and Wiesner trainers started to reflect on their work and react on actual demands on the basis of the new responsibility they experienced.

Dohmen (2001) observes that in the discourse in German a differentiation between "qualifications" and "competence" has consolidated. Following this, "competences" are understood as attitude regulating personal potentials and dispositions. These emerge primarily on the basis of reflected practical experience and may be activated for the solution of different challenges. According to Dohmen, important competences in the field of learning are competences of understanding, reflection and interaction, social competence and decision-making and responsibility competence. As Dohmen points out informal learning is, in a special way, characteristic for competence development learning as

- informal learning based on activities is experience based learning in its essence;
- implicit elements of informal learning are resulting in the development of experience, attitudes, values and skills;
- decision making and responsibility competence developed in everyday life offers potentials for the development of competences;
- competence is primarily understood as ability for self-organisation and self-regulation.

The different facets of informal learning as experience based learning, implicit learning, everyday life learning and self-regulated learning fit into an integrated concept: competence is developed on the basis of integrated learning processes through activities. Based on this understanding, only learning processes which are – such as informal learning – linked to other activities or situated in authentic living and working contexts may result in the development of competences.

On that basis Dohmen (2001) argues that the focal point shifts if competence development is designed as guiding principle of a new learning culture, although the necessary involvement of systematic informal learning in competence development and its relevance in lifelong learning must not be neglected. Taking into account the characteristics of informal learning as competence development learning a certain "transfer competence" becomes more and more important: the adequate transfer of knowledge, findings, value assessment and competences into practical behaviour and activities.

Planned and organised learning in educational institutions is normally supported and guided by trainers, teachers and tutors and is taking place in more or less intense group contacts in institutions concentrating on learning. Informal learning taking place outside such educational contexts is lacking adequate support. Dohmen makes a series of suggestions how to support informal learning, for instance by making the necessary information and learning aids available as directly as possible within the relevant context. He argues for targeted learning support and counselling service which needs to be embedded within learning networks – since single institutions in general are not capable of providing the different learning aids – combining, organising and storing the knowledge and competence of different educational institutions, enterprises, databases, and groups of experts. Training institutions have to face changing demands for services when supporting informal learning, especially:

- general basic orientation and organisation knowledge as the foundation for further learning;
- acknowledgement and consideration of prior learning by using independent competence assessment;
- practice oriented learning using concrete tasks, case studies, projects and life situations and by making use of new media;
- exploration of the (learning) environment and training of explorative and extrapolating learning;
- inclusion of experts and practitioners for discussions, information and counselling in problem-solving learning processes;
- making learners familiar with increasingly self-regulated learning, where learners are required to investigate, collect, organise, argue and present information and to select materials and aids according to the aim and target of the task;
- encouraging voluntary further training on the basis of the learners' insight and initiative and the joy of meaningful learning.

Information and communication technologies (ICT) offer adequate possibilities for self-regulated learning. Therefore, competence in using new media is an important element of learning competence that needs to be trained. In addition the supportive functions of the new media for informal learning need to be tested systematically and made fruitful for learners. Dohmen (2001) again points out the important role of training providers and educational institutions: They have to support and develop ICT competence and information processing competence of learners to enable them to cope with the amount of information available, e.g. in the Internet.

4 STUDIES

4.1 METACOGNITIVE BASICS FOR SELF REGULATED LEARNING

The research project SeLK ("Neues Lernen und Vermittlung von Selbstlernkompetenz" ~ New learning and transfer of self-learning competence) was funded by the German Ministry of Education and Research. The project had the following aims (cf. Kaiser 2003, p. 14f):

- to train participants of training courses in using metacognitive oriented techniques for guiding their own learning processes so that they would be enabled to use the acquired competences after the training has finished in their work environment/in their daily life;

- to train the trainers in the transfer of metacognitive funded self-learning techniques;
- to carry out research on supportive/debilitating correlations.

In this project testing as well as control seminars were implemented. 273 persons were involved in the testing seminars whereas the control seminars included 93 persons – thus involving 366 persons in total. Nearly half of the participants (45%) were skilled workers (4% having passed an examination for the master's certificate). 13% of the participants had a university degree and 8% a degree of a university of applied science. The high proportion of persons having not finished secondary school education (16%) is explained in that one of the seminars included participants still in training/schooling (c.f. Kaiser 2003, p. 230f).

Kaiser (2003) uses the concept of “metacognition” as the starting point. Metacognition is understood as the thinking about thinking processes. In that sense metacognitive guided thinking processes are not directly related to the solution of the problem or the learning task but to the strategies which are activated for their solution. Metacognition includes general competences not dependent on specific situations and applicable in different contexts: thinking has to be aware of the kind of task and the localisation of a problem in a specific field of reference, and it is dependent on the application of strategies in actual problem solving processes. The successful application of abstract knowledge, described as the executive aspect of metacognition, is of eminent importance too and includes three interconnected activities: planning, regulation and monitoring of thinking processes. The relationship between self-regulated learning and metacognition is exemplified by Kaiser by

- the development of learning plans;
- the transfer of learning goals into appropriate learning activities;
- the administration of controlling functions while learning.

More precisely, self-learning competence is described as the ability for independent planning, regulation and monitoring of thinking processes which form the basis of and are accompanying learning (cf. Kaiser 2003, p. 21).

Kaiser describes the results of the project in four important fields:

- Conditions for the acquisition of metacognitive competences: self-learning competence is based on metacognition, which has a declarative dimension (knowledge of thinking processes, knowledge of tasks and strategies) and an executive dimension (metacognitive actions, i.e. planning, steering and controlling). The acquisition of self-learning competences is to some extent dependent on the subjective perception of learning. Persons who give special attention to the learning process and see learning as an active problem-solving process or as an exchange of experience made considerable progress in the acquisition of self-learning competences. Persons actively engaged with the didactic-methodological arrangement and the activities of the trainers profited in the development of metacognitive orientations more than others. Kaiser refers to a group of persons which he describes as acting-experimenting. This group of persons was the only one (out of four groups) to make advances in the declarative as well as in the executive factors.
- Structural conditions: metacognitive aspects were rarely found in the courses of the project. In case they were present in the courses, they were limited to the declarative aspect, i.e. the transfer and acquisition of metacognitive knowledge. The competence for planning, steering and controlling metacognitive processes was omitted. Trainers and participants put the focus

primarily on the cognitive level, rather than the metacognitive level of how to approach certain tasks. Three aspects were identified to be less supportive for the transfer and acquisition of metacognitive competences: 1) complex and/or insufficiently structured or inconclusive tasks complicate metacognitive approaches of the learners; 2) tasks that are (too) easy to accomplish reduce the effort for metacognitive thinking; 3) it is essential to make thinking processes transparent and talk about them. To support this it is very helpful if trainers express explicitly their approaches or if the participants communicate their learning processes.

- Transfer of metacognitive competences: participants decide about their transfer concepts already in the training situation – they reflect on the relevance of the learning material/processes already during the training situation and take a decision whether these are appropriate for them or not. This process needs to be reflected in the design of learning activities.
- Trainers need in-depth knowledge of the concept of metacognition, diagnostic competences as well as methodological-didactical planning and decision making competences. Their attitudes towards learning/training need to match the concept of self-regulated learning. Independently of the specific attitude of the trainers the following objective impediments can be observed in the implementation of self-regulated learning: 1) Trainers have too little knowledge of the basics of the concept of metacognition, which results in uncertainties in the planning and realization of the training activities. The uncertainty points out to the need for training of the trainers. Training institutions need to provide the time, material and personnel resources as basic conditions to allow the concept metacognition to become a formative element in their training courses.

The most important consequences for an educational practice themed towards self-regulated learning are outlined in the discussion of the research findings further below. Here a suggestion of Kaiser (2003, p. 23f) of metacognitive training activities:

Metacognitive training activity	Description of technique	Function	Annotations
Partner training	Collaboration of tutor and tutee. Tutor is expert – hierarchical relationship. Demonstrates his/her way of fulfilling tasks. Makes his/her metacognitive activities transparent by speaking aloud while carrying out tasks.	Model learning: tutor is a model for different methods of problem solving. Advantage for tutee: adopts the demonstrated methods and strategies – as far as successful – into his/her repertoire. Advantage for tutor: reflexive function – through the explanations the tutor becomes aware of his/her own metacognitive activities in a new quality.	Because of the support of the tutee by the tutor and the (intimate) situation of paired learning the technique is especially suited for the starting phase of metacognitive training or a metacognitive oriented training unit. Best suited in apprenticeship training. Show how to do things -> guidance to do it on one's own -> tutor gradually reduces efforts
Cooperative problem solving	Cooperation of two problem solving individuals having rather similar expertise – symmetric relationship. Change of metacognitive oriented guidance role among the partners.	Externalisation of the thinking processes of the two partners by thinking aloud. Enrichment, differentiation of the metacognitive knowledge (person related, task related and strategy related) for both.	Due to the similar situation of the two problem solvers it is easier to avoid an asymmetric relationship (tutor having a too dominant role)

Metacognitive training activity	Description of technique	Function	Annotations
Variation of the quality of the solution of the problem	The learner is asked to find good and bad solutions for the task. Every solution has to be justified.	Finding arguments for the different solutions demands for reflecting ones own Tun. But: Besides the cognitive dimension (working on the task), strategies (thinking processes) which lead to good/bad solutions are thematised (metacognitive dimension)	This method is more game oriented: The good/bad handling of tasks makes it possible to put the suitability of the applied processes towards problem solving into the centre rather than the actual solution itself.
Stimulated annotation	The learner observes (directly or indirectly via a written protocol or video) the problem solving processes of others. He/she comments on the approaches, compares them with others and suggests alternatives. These comments are noted and analysed.	There is a permanent comparison of one's own thinking with that of others. On this basis, there is a chance of enriching the metacognitive knowledge. Observing successful approaches of others stimulates to take up other strategies and using them for one's own purpose (enrichment of the metacognitive repertoire).	A very relaxing approach for the learner: the actions of another person are at the centre of the attention; this is only indirectly the case for the observers (e.g. when they are asked to develop an alternative strategy to the one suggested by the observed person(s)). This training technique is well suitable for working with and in groups.
Self questioning technique	Translation of the central metacognitive steps – planning, regulation, control of thinking processes – into guiding questions. These are explicitly addressed one after the other.	Metacognitive activities are transferred into task-related questions. Every metacognitive step throughout the whole problem solving – or learning process remains conscious.	Self questioning technique is a variable instrument: questions on metacognitive processes can be adapted to the specific type of task and can be differentiated accordingly.
Learning diary	Description and annotation of one's own learning processes and problem solving strategies throughout a longer time period. Description and analysis takes place at two levels: What has been learned? (cognitive level) How did the person learn? (metacognitive level)	By describing the learning and problem solving processes the nature and scope of declarative knowledge is expanded. The analysis and improvements made raise executive competences.	In the initial phase entries in the learning diary should be done in a group work, at best after every complex working unit, in order to get acquainted to this technique. It is important to observe cognitive as well as metacognitive dimensions when reflecting on the learning diary. One problem of this strategy is the demand for perseverance on behalf of the learner, having to write the entries on one's own after the initial phase.

4.2 LEARNING COMPETENCE FOR THE KNOWLEDGE SOCIETY

The study carried out by Mandl and Krause (2001) is of special interest as the authors investigate the possibilities of the Internet in enhancing competencies in self-regulated, cooperative and web-based learning. In addition they point out factors that should be taken into account when implementing new concepts of learning for the development of learning competence.

Mandl and Krause point out specific problems and issues of learning to learn in the web based seminar on knowledge management carried out at the Institute of Pedagogical Psychology and Empiric Pedagogy at the Ludwig-Maximilians-University Munich. The seminar was embedded within the framework of the Virtual University Bavaria (VHB). The aims of the seminar included an introduction to the complex and interdisciplinary field of knowledge management as well as sensitisation for the specific problems of knowledge management in organisational contexts. The didactic aim of the seminar included training of self-regulated and cooperative learning and working in the Internet. Self-regulation and cooperation competence were explicit learning objectives for the participants of the seminar (no exact numbers given) seminar. The intention of Mandl and Krause was to enable students not only to receive and reproduce information but actively support the construction of knowledge. Authentic case studies as well as tasks to be completed by the students marked the starting point for such a construction process.

On that basis Mandl and Krause try to support three partial competences: self-regulated learning should be supported by autonomous work in small groups. Working in groups is also at the core of supporting cooperation competence. Tasks and cases are analysed in groups and their results again form the basis for the assessment. Individual contributions to the group work can be traced through the online forum used as the communication and working environment (in addition to e-mail). The Internet is used for Web quests. Putting the Internet and the use of Information and Communication tools at the centre of the seminar aims at the improvement of different aspects of reflection and practical application of media competence, the third partial competence of the learning competence according to Mandl and Krause.

Most notably Mandl and Krause observed two main problems due to the focus on self-regulation: "look for authority" and "free riding". In their description of the phenomenon "look for authority" Mandl and Krause point out the observation, that some learners have difficulties with autonomous, self-regulated learning and suggest incentives, help, moderation by the learners, regular and timely feedbacks and optimised group and time structures as solutions.

The authors admit that certain self-regulation, cooperation and media competences are necessary for successful participation in the seminar but they also state that these competences are actively supported by different means: a clear seminar structure, which prevents mental overload through self-regulated learning, help by the course instructors when questions and problems arise as well as support for web based collaboration.

4.3 INFORMAL LEARNING AND THE ACQUISITION OF COMPETENCES

In this study Zürcher (2007) gives an overview on those aspects, influencing informal learning and the connected question of competences. He makes annotated references to 330 further documents (most of them available in the Internet) which make this document a remarkable resource collection on the topic. Before outlining historic-political references as well as the concepts and theoretical foundations of informal learning Zürcher addresses the main learning fields in which informal learning is of importance. He uses the example of a training course for long-term unemployed persons (offered by the BiKoo association – see below) to exemplify the didactics of informal learning. As a model for integrating formal and informal aspects he proposes the "open learning

environment". In the following chapters Zürcher addresses the concept of competence and competence development as well as the recognition of informally acquired competences. He finalises by highlighting the interfaces between formal and informal learning, respectively the integration of both.

At the centre of the interest for this literature review is the didactics of informal learning which Zürcher exemplifies through the courses offered by Bikoo (Bildungskooperative Oberes Waldviertel)² and the European Social Fund (ESF) Project "BildungseinstiegeInnen"³. In this project (November 2003 until October 2005) criteria for low-threshold learning opportunities as well as educational mentoring were analysed and the nexus of informal learning and formal qualification investigated. The project aimed at the establishment of a biographical relationship by in parallel leaving room for individual preferences. The biographical relationship was established by, for instance, by demonstrating craftsmanship or manual skills (as far as the course participants locate their competences there). Learners were involved in a comprehensive human development concept and guided by mentors, supporting the learners. The work of the mentors included social activities, psychological attendance and adult education: They informed, guided, gave advice, evaluated and kept records. In a broader sense their work included the documentation of processes within the courses, the development of a comprehensive learning competence and fostering the possibility for the learners to go on to further training programmes.

Zürcher (2007) explicitly warns about putting too much focus on informal, work-related learning, as not all competences can be developed that way. Instead, he points out the positive effects of relating learning in courses with learning at the work place which is adding to the feeling of meaningfulness and facilitates the establishment of a connection to one's own life.

A further important aspect he refers to is to link experiences made and knowledge gathered in practice to existing theoretical concepts – a competence which he identifies as "transformation competence". This competence is supported by the stimulation of reflexive thinking processes and the discussion of specialist background knowledge. On that basis, Zürcher understands didactics of informal learning in a way that it has to reflect the framework conditions in which learners can follow their interests and aims: different to "standard" training or courses the context is guiding the learning process. Depending on the borders set for the learners, self-regulation and self-organisation is possible within a predefined learning environment. The conceptual focus is on steering and organisation of the learning process with the aim to leave a maximum of options for the learning process open for individual choice and preference (which, according to Zürcher, implies the possibility of instruction by a teacher/trainer). Another important aspect of a didactic for informal learning is the creation of a biographic connection, by which informally acquired competences can be made transparent. Finally Zürcher states the necessity of low threshold access to learning. As informal learning is happening unplanned and incidentally such possibilities for access have to be implemented.

Zürcher is in favour of using the actual educational biography as the foundation for learning rather than a consideration of existing knowledge and actual interests which remains on the surface. By making the learner aware of his/her own learning successes and disappointments the disposition for learning is reconstituted and further learning is embedded within a larger life context. As a consequence the motivation is raised and learning becomes more sustainable. Step by step more

² <http://www.bikoo.at>

³ Kaster (2006) published a detailed evaluation report of this ESF project.

demanding contents are implemented and the modality of adoption is slowly approximated to practice. According to Zürcher this process has to be accompanied and guided individually and is in need of a learning environment enabling individual learning paths. As a result the individual responsibility, respectively learning competence is improved.

5 DISCUSSION OF RESEARCH FINDINGS AND CONCLUSIONS THAT CAN BE DRAWN FOR (NON-FORMAL) ADULT EDUCATION

The increase in importance of lifelong learning as a challenge for every single person goes together with the multi-faceted changes in economy and society. Mandl and Krause (2001), Nuisl von Rein (2002), Kaiser (2003) and Pätzold (2008), amongst others, have pointed out some important aspects and processes, e.g. the change to a post-industrial society/knowledge society; new technologies; learning as an integral process of knowledge construction – a move away from consumer behaviour in learning and the “omnipotence” of trainers/teachers.

The importance of non-formal and informal learning as an integral element of learning processes has been in the focus of research for several years now which is shown in a great number of publications and projects on different aspects of formal, non-formal and informal learning including, e.g., informal learning at the workplace, new technologies and their potentials for supporting informal learning, recognition of informal learning, interrelating formal and informal learning processes, self-regulated learning etc. Taking into account the amount of literature published and projects carried out on different aspects of non-formal and informal learning it is astonishing how little has been done in the field of developing learning to learn competences. The lack of research, especially when it comes to the learning of elderly adults, is even more eye-catching taking into account the huge number of guidelines, manuals, and tools (many of them lacking a research and evidence base) addressing the needs of pupils and students to develop learning to learn competences.

The research of Dohmen (2001) on informal learning and the paper on learning competence in the knowledge society by Mandl and Krause (2001) mark important steps in the German speaking research community drawing the attention of more researchers to this topic. Mandl and Krause perceive learning as an active, constructive, self-regulated, situated and interactive process. Competence is defined as the ability to act successfully, and in relation to learning competence they suggest a subdivision into three components: self-regulatory competence, cooperative competence, and media competence. Seven years later, Pätzold (2008) further elaborates on the key competence learning competence. Learning competence – learning to learn – for him is the ability to start and continue a learning process:

- individuals – alone and in groups - are capable of organising their own learning process, also by taking into account efficient time and information management;
- learning competence includes awareness of one's own educational needs, the identification of the available learning offers and the skill to overcome barriers towards successful learning;
- learning competence includes taking up and processing new knowledge and skills and to look for and make use of (educational) counselling;
- learning competence includes building upon prior learning and life experiences in order to use and apply knowledge and skills in a multitude of contexts – at home, at work, in education and vocational training;

- motivation and self confidence are of great importance for the competence of the individual.

Faulstich and Ludwig (2004) are pointing towards another strand in the German scientific community: based on the work done by Holzkamp (e.g. Holzkamp 1993) they argue for the support of expansive learning, a term highlighting the individual development and participation in society. The focus is on the thinking and acting individual, who – in contradicting societal circumstances – is seeking for increased participation.

Another important cornerstone in the German scientific community is the discourse on the “Ermöglichungsdidaktik” (cf. Arnold and Schüßler 2003). Based on a constructivist approach this didactic is based on the principles of self-regulation and argues that learning processes cannot be generated by trainers externally. Trainers can only take care for the provision of supportive learning environments and on that basis enabling learning processes by the learners. This approach has been taken up or at least has been considered by a number of authors, e.g. Faulstich and Ludwig (2004), Kirchof (2007) and Zürcher (2007).

Kaiser (2003), taking into consideration the ongoing discourses in the field of informal and implicit learning, refers to addressing learning processes explicitly. For Kaiser this is a fundamental prerequisite for self-regulated learning and the development of metacognitive competences in this field. Since this approach is unfamiliar or even unknown to most adults Kaiser calls for the development of these competences through learning counselling, learning guidance and reflected practical introductions by experts. Overall, he calls for organised learning in order to develop self-learning competence based on metacognitive reflections. Another consequence of his arguments is that implicit learning which does not consider metacognitive reflection processes does not improve the learners’ learning competence but leaves them on a status repeating unfavourable strategies.

Pätzold (2008) sums up the two main strands of research on supporting self-organised learning: one group of researchers is calling for instruction oriented learning environments that focus on the training of learning to learn competences; another group is focussing on supportive learning environments. Mixtures and overlaps of the two directions are possible.



(Graphic with alterations from Pätzold 2008)

Direct strategies include:

- training of a comprehensive set of learning strategies
 - strategies to positively influence the learning (e.g. self-motivation; time management, concentration, dealing with fear and stress)
 - strategies for the acquisition of knowledge (e.g. recognising important aspects, information processing)
 - control and self-reflection strategies (e.g. control of own understanding and skills; control of learning processes)
- transfer of a training on learning strategies
 - sensitisation for the use of the strategies
 - development of strategies
 - systematisation of, broadening and eventually. correcting strategic knowledge
 - application of strategies and evaluating them taking into account their usability for personal learning

Indirect strategies include:

- constructivist learning environments and explorative training concepts
- increasing freedom for self-regulation
- individualisation of training (independent learning paths, individually adapted speed of learning progress, individual selection of media, learning materials and methods)
- provision of learning aids (advance-organiser)

Two other fields of research are influencing the academic discourse: firstly, the whole research field on “competence” is directly related to the perception of learning to learn competence; the second research field is that in neural sciences, having effects for instance on the perception of learning of elderly adults. Unfortunately, the scope of the literature review does not allow considering the full breadth of the respective research results.

On the basis of the literature review a series of conclusions can be drawn with respect to an educational practice oriented towards self-regulated learning and the development of learning to learn competences:

Acquisition of learning to learn competences

Nuissl von Rein (2002) is observing the recurring question of how learning is actually "happening". For him the most important question in relation to adult learning is how learners can plan and organise their learning paths as autonomous individuals who are capable of acting. In the respective discourse, learning methods – i.e. acquisition, processing and reproduction of knowledge, control of learning and the decision about learning – are at the centre of the attention. Nuissl von Rein points towards a lack of attention given to the question of individualised learning strategies. The methodological repertoire of each individual, e.g. time management, search for information etc., is subordinated and instrumental to this individual “learning strategy”. Strategic elements of learning at this level of an individualised “learning strategy” are mutually linked to biographical and personal aspects. On that basis Nuissl von Rein argues that the demand for the development of learning competences directly addresses the individual structures of personality. Therefore the development of learning competences is not about instrumental know-how of single working methods but refers

to the organisation of these working methods within one's own learning strategies. The adaptation of different learning methods and the adjustment to individual learn-strategic prerequisites are the main tasks for the future discussion on the development of learning competence.

Relating to the different personal factors Kaiser (2003) addresses the necessity of learning diagnosis and learning counselling. Participants need to be aware of the subjective prerequisites for their learning and of their attitudes towards learning and learning success, their motivation for participating in training, their approaches towards problem solving and the consequences on their learning behaviour. In a next step it is possible to influence these subjective conditions. Learning diagnosis and learning counselling may take the form of individual counselling but could as well be implemented in learning groups and their working processes.

Nuissl von Rein (2002) argues that methodological competences cannot be learned on a "neutral" basis. The methods and strategies, how individuals can learn best, are developing along working on a specific task or problem. Therefore, the learning of methods, which are compatible with individual learning strategies, has to take place by working on concrete objects. To some extent adult education has already started to reflect this in practice by implementing possibilities for self reflection and, therefore, in parallel supporting the development of methodological competences: reflexive phases are implemented in trainings, methodological approaches are discussed, learning and teaching processes are made transparent etc.

Kaiser (2003) highlights the need for inner differentiation among the learners: whereas other groups may profit from a normal learning/performance level of a course and may improve their competences in self-regulated learning, learners with highly developed metacognitive skills need an adequate learning environment. Trainers and seminar leaders have to find adequate solutions to differentiate between the learners and their individual needs. Kaiser suggests to confront learners in group work with tasks of different levels of difficulty or to involve them in the seminar as tutors.

The interaction of subjective ideas about learning and metacognitive orientation has to be taken into account and needs to be transferred into practice. This is also true for courses and trainings primarily oriented towards the acquisition of directly applicable techniques and tools. Kaiser suggests to establish learning contracts which aim at carrying out problem oriented tasks (appropriate for the respective course/seminar) at least at some stages of the course. In addition, he claims that training methods have to explicitly address metacognitive activities.

Nuissl von Rein (2002) points out that the learning of individual learning paths to some extent doubles learning processes. Therefore, the amount of contents of courses and seminars supporting metacognitive methods and concepts need to be evaluated.

Course structures

Course structures need to be compatible with the concept of metacognition, i.e. the focus on the learning contents themselves needs to be revised and space needs to be given to the reflection of the learning processes. This can be done by making different modes of problem solving transparent for the learners. Task descriptions need to be clearly structured and unambiguous and formulated in adequate language. This facilitates grasping the requirements of the tasks by the learners and

enables them to identify the type of task and appropriate strategies for their solution. Tasks, questions and problems for the learners need to have an adequate level of difficulty in order to support thinking, identification of errors and the formulation of hypotheses. Examples for such tasks include collecting information, reporting, organising and observing. Kaiser (2003) calls for explicitly addressing learning strategies and metacognitive strategies in courses and seminars: activities supporting the development of learning to learn competences need to be implemented in the didactic-methodological arrangement of seminars.

Learning environment

Mandl and Krause (2001) suggest to support the development of learning competence (respectively the three components they split learning competence into: self-regulatory competence, cooperative competence, and media competence) by means of a problem-oriented learning environment. In contrast, for instance, to directly fostering learning competence (e.g. through specific trainings) the creation of learning environment is a more indirect approach. Both must not be seen exclusively but can complement each other. The learning environment that they describe is shaped by a constructivist approach, an active position of the learner and a reactive role of the trainer: whereas the trainer has the role of a guide, coach and counsellor who provides learning offers and support the learner has space for active knowledge construction. Reinmann-Rothmeier and Mandl (2001) outlined the following principles for such a problem-oriented learning environment:

- learning via situated and authentic problems;
- learning in multiple contexts – the same contents are learned in different contexts;
- learning by using multiple perspectives;
- learning in a social environment;
- learning by using new media.

Transfer

Subjective ideas concerning the transfer of the learning results of the learners have been set in relation to the training/learning process by Kaiser (2003). He argues that these need to be considered in the conception of the courses and of the single learning phases taking into account different methods and approaches: the importance of specific strategies needs to be made transparent for the learners at the beginning of a seminar/course. This can be done by confronting the learners, for instance, with discrepancies and failures which make missing competences transparent. Transfer does not happen on its own but needs to be trained, for instance by using role games. Readiness for transfer increases in parallel with the perception of the learner to be able to control his/her own activities. Here Kaiser identifies additional positive effects of metacognitive activities as they are not only useful for the self-regulated resolution of tasks but also have positive effects on the self perception of the learner: the learner increasingly becomes aware that he/she is capable of solving problems without others and on that basis gains self-esteem in his/her own competences as well as in the transfer of the learned contents (for suitable training methods cf. chapter 4.1).

Trainers

Trainers need to be trained in supporting the development of learning to learn competences. Kaiser (2003) suggests using concrete exercises (if possible supported by video analysis) which enable

trainers to train the active handling of different techniques and methods: possessing learning to learn competence alone is not enough. Trainers additionally have to reflect on their training and how the development of learning to learn competences can best be integrated within a course/seminar. Referring to empirical evidence Kaiser highlights the necessity of ongoing, permanent training, which should take the form of coaching parallel to practice.

Training institutions

The development of learning to learn competences cannot be left to learners and trainers only. Training institutions are stipulated to provide corresponding frameworks, including the investment in training activities for trainers and the implementation of educational counselling, coaching activities and the revision of existing curricula.

The questions addressed in this literature review point out the responsibility and commitment of pedagogy towards the individuals as observed by Kirchof (2007): pedagogy has to support individuals in coping with the demands of their (professional) environment and to deal with changing living environments. In this understanding individual learners cannot be left alone in the (informal) development of their learning processes but learning to learn competence development needs a synthesis of formal and informal learning processes. Individuals as well as institutions can be expected to put informal learning processes more into the centre of their attention: individuals, because this form of competence development is basically already existing and, as Kirchof (2007) shows, is well suited to support personal development; institutions, because a vision and acceptance of non-institutionalised learning forms is necessary. Next steps in the development of pedagogy and didactics need to shape the understanding of learning support, educational guidance and personal encouragement.

6 BIBLIOGRAPHY

- Arnold R. (2002): Von der Bildung zur Kompetenzentwicklung. In: Nuissl E., Schiersmann C. and Siebert H. (ed.): Kompetenzentwicklung statt Bildungsziele? Report 49/2002. (pp. 26-38)
URL: http://www.die-bonn.de/esprid/dokumente/doc-2002/nuissl02_02.pdf (last accessed: 13.1.2009)
- Arnold R. and Pätzold H. (2003): Lernen ohne Lehren. In: Wittwer W. and Kirchhof S. (ed.): Informelles Lernen und Weiterbildung. Neue Wege zur Kompetenzentwicklung. Neuwied. (pp. 107-126)
- Arnold R. and Schüßler I. (ed.) (2003): Ermöglichungsdidaktik. In: Grundlagen der Berufs- und Erwachsenenbildung. Nr. 35. Hohengehren.
- Baethge M. (2003): Lebenslanges Lernen und Arbeit: Weiterbildungskompetenz und Weiterbildungsverhalten der deutschen Bevölkerung. SOFI-Mitteilungen, Nr. 31. Göttingen.
- Botzat T., Heuer U. and Meisel K. (ed.) (2001): Neue Lehr- und Lernkulturen in der Weiterbildung. Bielefeld.
- Brauer W. (2003): Vom Umgang mit lernungewohnten TeilnehmerInnen. GdWZ 2/2003. Neuwied. (pp. 71-73)
- Bretschneider M. (2004): Non-formales und informelles Lernen im Spiegel bildungspolitischer Dokumente der Euro - päischen Union. Dt. Institut für Erwachsenenbildung (DIE). Bonn.
URL: http://www.die-bonn.de/esprid/dokumente/doc-2004/bretschneider04_01.pdf
- Brödel R. and Kreimeyer J. (2004): Lebensbegleitendes Lernen als Kompetenzentwicklung. Analysen – Konzeptionen – Handlungsfelder. Bielefeld.
- Dehnbostel P. (2003): Informelles Lernen: Arbeitserfahrungen und Kompetenzerwerb aus berufspädagogischer Sicht. Neukirchen/Pleisse.
URL: http://www.swa-programm.de/tagungen/neukirchen/vortrag_dehnbostel.pdf
- Deutsches Jugendinstitut (ed.) (2004): Lernen für das Leben – Bildung vor und neben der Schule, München.
URL: http://cgi.dji.de/cgi-bin/inklunde.php?inklunde=9_dasdji/ThemaMai/start.htm
- Dohmen G. (1999): Weiterbildungsinstitutionen, Medien, Lernumwelten: Rahmenbedingungen und Entwicklungshilfen für das selbstgesteuerte Lernen, Bundesministerium für Bildung und Forschung. Bonn.
- Dohmen G. (2001): Das informelle Lernen. Die internationale Erschließung einer bisher vernachlässigten Grundform menschlichen Lernens für das lebenslange Lernen aller. Bonn.
URL: http://www.bmbf.de/pub/das_informelle_lernen.pdf
- Drewes C., Scholz D. and Wortmann D. (ed.) (2001): Aus der Arbeit lernen. Situationsaufgaben als neues Leitbild der Qualifizierung zum Geprüften Industriemeister Metall - Erste Ergebnisse aus den Modellprojekten. Bielefeld.
- Dybowski G. (1999): Erfahrungsgeleitetes Lernen – ein Ansatz zur Kompetenzentwicklung, QUEM-report, Heft 63, Berlin.
URL: <http://www.abwf.de/content/main/publik/report/1999/Report-63.pdf>
- Erpenbeck J. and Heyse V. (1999): Die Kompetenzbiographie: Strategien der Kompetenzentwicklung durch selbstorganisiertes Lernen und multimediale Kommunikation. edition QUEM, Band 10. Münster, New York, München, Berlin.
- European Commission (2000): A memorandum on lifelong learning. Commission Staff Working Paper (SEC(2000)1832). Brussels, 21.11.2000
(<http://www.bologna-berlin2003.de/pdf/MemorandumEng.pdf>, accessed 29.10.2008)

- Faulstich P. (2003): Lernen braucht Support – Aufgaben der Institutionen beim „Selbstbestimmten Lernen“, Dt. Institut für Erwachsenenbildung (DIE). Bonn.
URL: http://www.die-bonn.de/esprid/dokumente/doc-2002/faulstich02_01.pdf
- Faulstich, P. and Ludwig, J. (ed.) (2004): Expansives Lernen. In: Arnold R. (ed.): Grundlagen der Berufs- und Erwachsenenbildung. Hohengehren.
- Flavell J.H. (1979): Metacognition and cognitive monitoring. A new area of cognitive-developmental inquiry. In American Psychologist. Nr. 34. Washington. (pp.906-911)
- Frackmann M., Schwichtenberg U. and Schlottau W. (1995): Motivation in der Ausbildung zum lebenslangem Lernen. Handbuch. Bielefeld.
- Franke G. (2001): Komplexität und Kompetenz. Ausgewählte Fragen der Kompetenzforschung. Bielefeld.
- Friedrich H.F. and Mandl H. (1990): Psychologische Aspekte autodidaktischen Lernens. In Unterrichtswissenschaft. Nr. 3. Weinheim. (pp. 197 – 218)
- Grünewald U., Moraal D. and Schönfeld G. (ed.) (2003): Betriebliche Weiterbildung in Deutschland und Europa. Bielefeld.
- Gudjons H. (2001). Handlungsorientiert lehren und lernen. Bad Heilbrunn.
- Häcker T. (2005): Portfolio als Instrument der Kompetenzdarstellung und reflexiven Lernprozesssteuerung, bwp@ Nr. 8/Juli 2005. Bielefeld.
URL: http://www.bwpat.de/ausgabe8/haecker_bwpat8.pdf
- Hofmann F. (2000): Aufbau von Lernkompetenz. Neue Wege zur Realisierung eines bedeutsamen pädagogischen Ziels. Innsbruck.
- Holzkamp K. (1993): Lernen. Subjektwissenschaftliche Grundlegung. Frankfurt/Main.
- Kade J. and Egloff B. (2004): Entgrenzung und Begrenzung lebenslangen Lernens, GdWZ 2/2004. Neuwied. (pp. 49-52)
- Kaiser A. (ed.) (2003): Selbstlernkompetenz. Metakognitive Grundlagen selbstregulierten Lernens und ihre praktische Umsetzung. München.
- Kastner N. (2006): BiKoo – Bildungskoooperative Oberes Waldviertel. Evaluation des Ziel 3 Projektes „BildungseinsteigerInnen“. Materialien zur Erwachsenenbildung Nr. 1/2006. Wien.
URL: http://erwachsenenbildung.at/services/publikationen/materialien_zur_eb/11472_PDFzuPublID107.pdf last accessed: 12.1.2009
- Kirchhof S. and Kreimeyer J. (2003): Informelles Lernen im sozialen Umfeld – Lernende im Spannungsfeld zwischen individueller Kompetenzentwicklung und gesellschaftlicher Vereinnahmung, In: Wittwer W. and Kirchhof S. (ed.): Informelles Lernen und Weiterbildung. Neue Wege zur Kompetenzentwicklung. Neuwied. (pp. 213-240)
- Kirchhof S. (2007): Informelles Lernen und Kompetenzentwicklung für und in beruflichen Werdegängen. Dargestellt am Beispiel einer qualitativ-explorativen Studie zu informellen Lernprozessen Pflegenden und ihrer pädagogisch-didaktischen Implikationen für die Aus- und Weiterbildung. Münster
- Kirchhöfer D. (2000): Informelles Lernen in alltäglichen Lebensführungen. Chance für berufliche Kompetenzentwicklung, QUEM-report, Heft 66. Berlin.
URL: <http://www.abwf.de/content/main/publik/report/2000/Report-66.pdf>
- Kirchhöfer D. (2001): Perspektiven des Lernens im sozialen Umfeld. In: Arbeitsgemeinschaft Betriebliche Weiterbildungsforschung e.V. (ed.): Kompetenzentwicklung 2001.Tätigsein – Lernen – Innovation. Berlin. (pp. 61-78)

Klimsa P. (ed.) (1995): Multimedienutzung aus psychologischer und didaktischer Sicht. In Issing L. & Klimsa P. (ed.): Information und Lernen mit Multimedia. Weinheim.

Klippert H. (2002): Methoden-Training. Weinheim.

Kreher T. and Oehme A. (2003): Individuelle Tätigkeits- und Lernverläufe sowie Unterstützungsformen zur Kompetenzentwicklung für aktive Arbeits- und Lebensgestaltung. QUEM-Materialien Heft 42. Berlin.

URL: <http://www.abwf.de/main/publik/content/main/publik/materialien/content/main/publik/materialien/ab%202003/materialien42.pdf>

Kreher T. and Oehme A. (2004): Junge Erwachsene in der Informalität. Zur Entkopplung von formellen und informellen Entwicklungsstrukturen, Diskurs 2/2004. Leverkusen.

Kruse U. and Wiesner G. (2002): Gezielte Unterstützung selbstgesteuerten Lernens Erwachsener durch Weiterbildungsinstitutionen. Ergebnisse empirischer Untersuchungen. In: Kraft S. (ed.): Selbstgesteuertes Lernen in der Weiterbildung. Grundlagen der Berufs- und Erwachsenenbildung. Nr. 30. Hohengehren. (pp. 159 – 175)

Laur-Ernst U. (1998): Informelles Lernen in der Arbeitswelt. In: Berufsbildung in Wissenschaft und Praxis (BWP), 27. Jg., Heft 4. Bielefeld.

Laur-Ernst U. (2002): Informelles und formalisiertes Lernen in der Wissensgesellschaft, In: Forum 3: Lebensbegleitendes Lernen – die Bedeutung des beruflichen Erfahrungslernens für die Kompetenzentwicklung. (pp. 47-62)

URL: http://www.bibb.de/dokumente/pdf/pr_pr-material_2002_fachkongress_forum3.pdf

Mandl H. and Krause U.-M. (2001): Lernkompetenz für die Wissensgesellschaft. Forschungsbericht Nr. 145. München.

Meueler E. (1993): Die Türen des Käfigs – Wege zum Subjekt in der Erwachsenenbildung. Stuttgart.

North K., Friedrich P. and Lantz A. (2006): Selbstorganisation als Metakompetenz. In: Arbeitsgemeinschaft Betriebliche Weiterbildungsforschung e. V. (ed.): Metakompetenzen und Kompetenzentwicklung. QUEM-report - Schriften zur beruflichen Weiterbildung. Heft 95/Teil I. Berlin.

Overwien B. (2001): Debatten, Begriffsbestimmungen und Forschungsansätze zum informellen Lernen und zum Erfahrungslernen. In: Senatsverwaltung für Arbeit, Soziales und Frauen (ed.): Tagungsband zum Kongreß "Der flexible Mensch". Berlin. (pp. 359-376)

URL: http://www2.tu-berlin.de/fak1/gsw/fadida_sozk/fadida_sozk_downloads/bbj.pdf

Overwien B. (2003): Das lernende Subjekt als Ausgangspunkt – Befreiungspädagogik und informelles Lernen. In: Wittwer W. and Kirchhof S. (ed.): Informelles Lernen und Weiterbildung. Neue Wege zur Kompetenzentwicklung. Neuwied. (pp. 43-70)

Overwien B. (2005): Stichwort: Informelles Lernen. Ztschr. f. Erziehungswissenschaft, 8, 4/2005. Berlin. (pp. 339-355)

URL: http://www-gewi.uni-graz.at/weiterbildung/materialien/overwien_informelles_lernen.doc

Pätzold G. (2008): Ist selbstgesteuertes Lernen Garant für Nachhaltigkeit der Lernkompetenz. Presentation given at: 15. Hochschultage Berufliche Bildung in Nürnberg.

URL: <http://www.bag-metalltechnik.de/pages/HT2008/paetzold080312.pdf>

Reinmann-Rothmeier G. and Mandl H. (1998): Wissensvermittlung: Ansätze zur Förderung des Wissenserwerbs. In Klix F. and Spada H. (ed.): Enzyklopädie der Psychologie: Themenbereich C Theorie und Forschung, Serie II Kognition, Band 6 Wissen. Göttingen. (pp. 457-500)

Reinmann-Rothmeier G. and Mandl H. (2001): Unterrichten und Lernumgebungen gestalten. In: Krapp A. and Weidenmann B. (ed.): Pädagogische Psychologie (4., vollst. überarb. Aufl.). Weinheim. (pp. 601-646)

Reiserer M. and Mandl H. (2002): Individuelle Bedingungen lebensbegleitenden Lernens. In: Oerter R. and Montada L. (ed.): Entwicklungspsychologie (5th ed.). Weinheim.

Schlögl P. (2005): Identifizierung, Bewertung und Anerkennung von non-formal und informell erworbenen Kompetenzen in Österreich. TiBi Nr. 10: „Nichtformale Bildung und Wissensgesellschaft“.
URL: http://www.dipf.de/publikationen/tibi/tibi10_schloegl.pdf

Simons P. R. J. (1992): Lernen, selbständig zu lernen – ein Rahmenmodell. In: Mandl H. and Friedrich H. F. (ed.): Lern- und Denkstrategien. Analyse und Intervention. Göttingen. (pp. 251-264)

Stangl W.: Latentes, passives, implizites, inzidentelles oder informelles Lernen,
URL: <http://www.stangl-taller.at/ARBEITSBLAETTER/LERNEN/LatentesLernen.shtml>

Tippelt R. (2002): Von der Bildung zur Kompetenzentwicklung. In: Nuisl E., Schiersmann Ch. and Siebert H. (ed.): Literatur- und Forschungsreport Weiterbildung. 49. Bielefeld. (pp. 48-58)

Weinert F. E. (1999): Concepts of Competence. Contribution with the OECD project Definition and Selection of Competencies: Theoretical and Conceptual Foundations (DeSeCo). München.

Wittwer W. and Kirchhof S. (ed.) (2003): Informelles Lernen und Weiterbildung. Neuwied.

Zürcher R. (2007): Informelles Lernen und der Erwerb von Kompetenzen. Theoretische, didaktische und politische Aspekte. Materialien zur Erwachsenenbildung Nr. 2/2007. Wien.
URL: http://erwachsenenbildung.at/services/publikationen/materialien_zur_eb/nr2_2007_informelles_lernen.pdf last accessed: 12.1.2009