

The Concept of Learning Industry as part of “Leitbild Bauwirtschaft” (Business Principles of German Construction Industry)

The concept of Learning Industry is a suitable aim for Business Principles of construction industry: an industry, which it is worth to work for. The attributes of a Learning Industry are: it offers attractive and demanding workplaces, which make working in design and construction interesting and attract performant and motivated people. Enterprises demand from their employees high competence and willingness for Lifelong Learning and continuous professional development. In return they offer possibilities to develop competencies and they support permanent education and training of employees. An offer of transparent and calculable career options is a suitable means to support a policy of Lifelong Learning. To work in design and construction means to manage complex processes with brain and technology, to create a built environment worth to live in and to enjoy permanent personal development.

The concept of Learning Industry was defined and worked out in a cooperative approach including as many stakeholders of the industry as well as academic experts as possible. To do so the entire value chain of design and construction was taken into consideration.

Work was done by 12 thematic expertises, which were presented to and discussed by three expert workshops. Results were put together on a fourth workshop regarding them under the perspective of competence for management of interfaces in the value chain from the viewpoint of the main groups (architects, civil engineers, middle site management). To complete research five particular questions were examined in case studies.

1. The significance of competence of employees is acknowledged in the entire construction industry.

In the entire area of design and construction, high competence of employees is seen as crucial for competitiveness and quality of performance. Competence of skilled workers is the indispensable precondition of productivity and quality also where training is on-the-job. Guidelines of education and training for the value chain design and construction in order to specify the concept of Learning Industry. Education and training for professional performance inside the value chain design and construction has a twofold guideline. Competence for a specific area of expertise

Professional competence in an area of expertise is significant for successful professional action. Teaching knowledge, skills and competencies for a specific area of expertise is therefore of most importance in all subjects of training. It is directed to meet the state-of-the-art as well as towards the vision of the competent, autonomous and responsible expert. Competence to manage interfaces to be able to cooperate inside the value chain design and construction is seen as of crucial importance, but has only little share in real education and training time; with the exception of education and training of architects.

Competence to manage interfaces is based on knowledge of significance of one's own role and action inside the value chain design and construction as well as on others function and conditions of professional action contributing to the performance of the value chain. This competence also demands skills and abilities as social competence, to think in regarding entire contexts, methodological and problem

solving competence, competence to communicate and to cooperate, team-working, and according to one's position, leadership and organisation competence.

Acquiring competencies to manage interfaces is hardly possible in separate courses. It needs to be integrated in teaching competence for specific area of expertise. Suitable methods are project courses, action-oriented learning and interdisciplinary learning in teams as well as practical learning. The competence to manage interfaces can also result if employees from different fields of expertise are working together.

Studying and working abroad to make international experience is an important part of education and training courses in all occupational areas of design and construction in order to foster personal development and competence.

2. Architects dispose on competencies to manage the value chain design and construction.

Training courses of architects integrate competencies in an area of expertise and competence to manage interfaces. To stress the competence of architects to manage the entire construction process fosters – while safeguarding their professional identity – their adaptation to real development of working life as well as their integration into the value chain design and construction. To enlarge education and training for construction management will support such development. A progressive education and training scheme for architects can be constructed in the frame of Bologna-reform.

3. Shortening time for education and training jeopardises the competence of civil engineers and the quality of construction industry as Learning Industry.

Civil engineers with less than 3.5 years of education and training are not professionals. A bachelor degree after three years of education and training is not needed on the labour market. Such shortening of time for education and training is not coercively prescribed by the Bologna-reform. Universities and professional associations are demanding at least 3.5 years of education and training and think that four years are possible. Technical universities will dedicate their bachelor degree not to enter the labour market but a master programme, which enables to enter the labour market.

4. New demand for training given by companies

According to shortage of time for education and training companies must train their new entrants. It is expected that these training needs are more expanded and intensive than training at the workplace of new entrants before. Small enterprise may not be prepared to meet the needs of this training.

5. Skill shortage with technical experts predictable

Skill shortage with technical experts predictable. With civil engineers and middle site management a shortage of recruits is expected in the near future. The number of graduates in civil engineering is recently already smaller the demand pre-calculated for the next years. Taken the new entrants in study courses into account the number of graduates will not be growing. The number of graduates from courses for middle site management is smaller than the retirements expected from the age structure.

To implement strategies based on competence of technical professionals and middle site management in order to increase competitiveness (improvement of work organisation, increase use of technology, increase efficiency of use of energy, increase sustainability, working abroad) will be seriously hampered by such skill shortage.

Concepts and approaches to foster promotion of working in construction are under development. Concepts as well as approaches already in use to promote working in construction are intending to inform already in schools and to give authentic information on occupations and professions in construction. There is also an offer to experience working on site by placement on real sites or in training centres. Rational reasons to avoid working in construction, named self-critical by representatives of the construction industry, are lacking stability of employment, hard working conditions and low increasing of wages in the last years.

6. The construction industry is undergoing a continuous loss of its investment in human capital

The construction industry loses continuously parts of its remarkable investment in human capital. Of skilled workers trained in construction 10 to 15 years after finishing training and entering construction entering only about 50 p. c. is still active in the industry. Complaints on skill shortages arise at the same time when about 20 p. c. of deployable skilled workers are registered as unemployed.

7. Lifelong Learning and continuous training are crucial elements of the Learning Industry

Concepts and offers of Lifelong Learning and real taking part in continuous education and training are crucial elements of the Learning Industry. The foundation for Lifelong Learning in all occupations in construction is in initial training, oriented towards the concept of *Beruf*. The quality of initial training is crucial for chances and motivation of continuous learning. It is of high standard in all areas of design and construction and meets the requirements of the Learning Industry.

The continuation of Lifelong Learning is made by continuous education and training. Continuous education is extremely heterogeneous and unregulated; no complete overview is available. On many items and processes, data are not collected or only for very limited reasons. For some areas – for example continuous education of civil engineers information is not at all available. Some surveys do not provide sector specific data. The significance of training offered by producers of machinery and material obviously has been underestimated.

All available information shows that the construction industry only to a small extent takes part in continuous training. With respect to offer of continuous training, ration of employees participating and investment the construction in comparison to other industries is situated at the bottom of the ranking.

So new political evaluation of and political approach towards continuous training are required. Social partners in construction have named continuous training as an important field of policy in order to ensure the competence of employees. However, concepts for implementation are not yet known. The Action Programme, agreed in 2003, is still not yet implemented.

Regulation is fostering continuous training. Without more intensive information and promotion as well as regulation of access to and financing of continuous training the rate of participation in continuous training in the construction industry will not rise. The obligation to take part in continuous training results in increasing participation rates, a greater offer and higher estimation of continuous training by companies even if participation and estimation has been at a high level before obligation was introduced. Incentives can have the same results as an obligation if they guarantee the return on investment in human capital to companies and employees.

New regulation of continuous education and training for middle site management. The process to work out a new regulation for continuous education and training will result in an education and training

scheme meeting the state of the art with respect to pedagogy and political discussion in the field of vocational education and training. It is structured by business areas, directed towards the principles of openness and permeability, takes results on non-formal and informal learning into account as well as a validation of former learning and is based on action oriented learning.

Training centres as important resource for education and training. With its training centres the German construction industry disposes on a valuable infrastructure for Lifelong Learning. The human resources of the training centres ensure initial and continuous education and training of high quality. To keep this standard continuous investment as well as evaluation is needed. The training centres are able to use their potential of knowledge, skills and competence to offer additional services to companies, in particular on the field of human resource management.

New momentum is given by European VET-policy to education and training in construction. Initiatives on European level have introduced consideration of non-formal and informal learning. A credit point system based on learning outcomes will be developed in order to work out a concept of validation of former informal learning.

8. Human resource management can provide an offer of attractive workplaces and possibilities of professional development in the Learning Industry

The concept of the Learning Industry is based on the link between qualified employees and workplaces, which require high competencies. Lifelong Learning and human resource management therefore are two sides of the same coin. Agreements on objectives and professional development schemes with clearly defined career options are the most important instruments of human resource management. In many small enterprises, human resource development is not in use. The lack of human resource management and a low participation rate in continuous education and training obviously are determining each other.

Strategies to safeguard investment in human capital on industry level. On industry level strategies to safeguard investment in human capital can be implemented which can support strategies on enterprise level. These can be installed e. g... by collective bargaining policy supporting education and training, integration of times for learning into working time schemes, or concepts to offer training to workers instead of unemployment. The demographic change has also to be taken into consideration.