

Integrating Project Work into Distance Education Courses

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Abstract—Today, learning processes in everyday life and education as well as in the workplace increasingly take place in the digital world. This digital knowledge transfer is characterized by a great diversity, especially regarding training on the job and working on projects. Corresponding to an ideal interlocking of theory and practice as well as the project-related knowledge acquisition, holistic concepts of using digital learning methodologies have to be implemented. Furthermore, for a successful integration of vocational and academic education the possibility of recognizing informal gained knowledge is an important unit of this holistic approach. Especially in the extra occupational distance education, workplace-related qualifications, recognizing on the one side prior formal as well as informal learning and e-learning outcomes and on the other side also experiences and skills gained in the working environment, are target-group-specific offers for vocational qualified individuals.

Index Terms—Accreditation, knowledge management, transfer and recognition management, workplace learning.

I. INTRODUCTION

On the basis that there is an increased motivation for lifelong learning and that, for ensuring successful policies for lifelong learning, basic principles and procedures for the recognition of prior learning should be developed, the Council of the European Union published recommendations on the validation of non-formal and informal learning in 2012 [1]. Ref. [1], the member states should create appropriate procedures for validation, including the identification, documentation, assessment of learning outcomes acquired in non-formal and informal settings, as well as the certification of the results of the assessment of an individual's learning outcomes in the form of a qualification, or credits leading to a qualification. The aim is to offer the opportunity to demonstrate what individuals have learned outside formal education and training and to make use of that learning for their careers and further learning. To foster participation in this process, education and training providers should facilitate access to formal education and training by implementing mechanisms for recognizing prior learning and experiences acquired in informal settings [1]. In order to promote the process of lifelong learning, educational systems must become more permeable, and innovative transfer models must be introduced at the interfaces of vocational and academic education to blur the still rather distinct boundaries between these educational sectors in Germany. The development of new learning paths requires special adjusted methodical concepts to support learners. Therefore, the focus of this paper will be on the possibilities of combining recognition procedures and

digital learning methods to ensure the knowledge transfer between different learning environments.

II. DIVERSITY OF KNOWLEDGE TRANSFER IN THE WORKPLACE AND FORMAL EDUCATION

Learning is a permanent process for individuals of acquiring information, knowledge, skills, etc. It takes place as well on the individual's level as on the level of teams, groups, or organizations. A look into a typical working process scenario shows further that most of the work is organized in process orientated projects which are realized by a team. Projects are temporary social and work systems. That means, within a project orientated company or institution there is a pool of projects and an amount of project specific or overspreading resources like materials, technical equipment, or devices. Furthermore, an amount of individuals work in the course of time in different constellations on an amount of projects dealing with complex data, information, and knowledge. Starting a new project or working task, it needs the constitution of a new working group where each team member comes with its knowledge and competence. On the other side, the fulfilment of the project goals needs special knowledge and/or competence. Thus, there may be a difference between existing and needed knowledge, and it is necessary that the project worker closes this gap by learning. This project orientated learning improves the individual's knowledge and competence. David Kolb, an American educational theorist focused on experiential learning, outlined his theory of learning styles in [2] which consists of the information in our genes, life experiences, and the demands of our current environment.

Thus, experiential learning reflects a crucial part of the lifelong learning process: ongoing, voluntary, and self-motivated ambition for knowledge [3]. Lifelong learning is besides of traditional education and learning valid in addition to degree attainment. This is exactly the direction of this paper is concentrated on: the correlation between theoretical knowledge and practical work experience, and the knowledge transfer and its influence of the individual learning process.

In both cases, when starting a vocational training or a course of study, at first the transfer of theoretical information and knowledge to the participants takes place, i.e. the formal learning. The result is a cloud of more or less formal knowledge which cannot be completely utilized by the learners. Only the application of the information and knowledge resulting into experience leads to internalized knowledge. The Greek philosopher Plato said that knowledge is a true and justified opinion [4]; which means that knowledge exists for an individual, if this individual has a substantiated opinion about it. Exactly this happens, when the student or trainee applies

its formal learned knowledge in practical working. The formal knowledge will be reflected and evaluated. These recognitions added by the new knowledge from the practical project work reflow to the theoretical knowledge and improve the knowledge base. Hence, the process of knowledge transfer [5] with initiation, knowledge flow, and integration is reality.

Knowledge transfer itself, the knowledge correlation between theory and practice, takes place digitally but also non-digitally. Lots of knowledge will be exchanged by conversation, books, etc. But the knowledge generated this way is intangible knowledge, mostly tacit knowledge of the individuals which is hardly to capture. That is why here priority is given to the view onto digital knowledge transfer; including all information, knowledge, media which are digitalized and can be transferred in electronic way. Digital knowledge transfer takes place in different ways, e.g. synchrony or asynchrony communication; knowledge networks; social networks. Important is that the variety of media can improve the enticing, saving, and transferring of appropriate knowledge. For optimized knowledge transfer in learning procedures it is important to direct and support the learnings with a perfect fitting compilation of digital media embedded in a didactical concept.

III. RECOGNITION OF INFORMAL GAINED KNOWLEDGE AND REFLECTION OF EXTRA OCCUPATIONAL EDUCATION TO WORKPLACE LEARNING

Exactly this need for change in learning and education processes is currently taken up and reflected into new concepts for recognition of working experiences.

Considering the objective of making educational sectors in Germany more permeable and the recommendations of the Council of the EU, the University of Applied Sciences Zwickau (WHZ) in cooperation with a vocational education institution developed extra occupational distance courses, e.g. a Bachelor's degree in Business Administration, as target-group specific, higher educational qualification offers for vocational prequalified students. Recognizing the vocational training as well as the experiences and skills informally acquired in the workplace, 50 per cent of the eight-semester study can be substituted for graduates of an appropriate advanced vocational training. The accreditation of formal learning outcomes takes place in a standardized procedure on the basis of the certificate from the advanced vocational training. This means that the learning outcomes of this continuing vocational training certificate have been assessed, regarded as equivalent, documented and thus can be accredited for every holder of the certificate [6]. Otherwise the informal acquired learning outcomes are recognized in a specifically developed individual procedure. Therefore, special modules are developed and installed to the extra occupational distance studies, in order to give vocational prequalified students the opportunity to utilize their vocational experiences and skills for the study and to get them recognized as credits. Additionally, such modules serve as a reasonable interlocking of theory and practice, and enable to use and generate synergies emerging from the parallelism of formal learning and occupational performance, which is anyway constantly accompanied by informal learning

processes. Informal learning, in this instance, means learning which takes place in the work context. It is not formally structured or organized and relates to performance in the job and employability. It may be unintentional and unconscious. The learning outcomes are knowledge, skills and competencies, acquired by work experiences, like strategies for solving specific problems, the ability to head up a project, ICT skills or intercultural competencies.

Ref. [7] informal learning correlates with formal learning activities, meaning that they both support and affect each other. Informal learning works best when a kind of stimulus, e.g. problem-solving, gives need for learning, when the new knowledge is practiced and helps to improve performance, and when the learning is recognized and the learner reflects on experience. There are several benefits of informal learning, like employability and flexibility, its adaptability to context and the rapid transfer to practice. But it can also have drawbacks if one relies on informal learning alone: It may be too narrowly based, so that the learner learns only superficial skills, or even wrong lessons, which are not transferable or the learning remains unconscious and therefore does not lead to an improvement of performance. Furthermore, it is difficult to accredit informal learning outcomes for formal qualifications. In conclusion, informal learning cannot replace formal learning activities but complement them in a useful manner. To maximize and utilize informally acquired knowledge, it needs to be recognized and valued and possibilities for accreditation have to be facilitated [7].

The before mentioned modules, developed for the utilization and accreditation of vocational competencies, were conceptualized trying on the one hand to use the benefits of informal learning in the workplace and on the other hand to eliminate its drawbacks. The educational objectives of such a module consist of the impartation of a deepened insight to typical issues and problems in the area of studies and the application of vocational experiences concerning technical, organizational and economic coherences within the business. Further, it fosters the training of flexibility, team spirit and interdisciplinary methods, as well as contemplation and presentation of tasks and activities in business during the project work. The students choose specific project-related scopes concerning to the profiles and topics of the degree course. By reflecting on and academically editing these scopes within the context of their working environment, they prepare research papers and project reports which then serve for the course assessment of the module. Due to the constant support of the learning process throughout the course of the module, students have a permanent feedback. The whole process, beginning with the formulation of a research question corresponding to the students' individual tasks in the workplace to the preparation of papers and finally their assessment, is supervised by the teaching staff of the university. Therefore, the adaptability and transfer of informal learning outcomes, emanating from the working environment, are ensured through their embedding within the formal learning process. Furthermore, students have the possibility to test their formal learning outcomes in the field by applying them to their tasks in the workplace. Consequently, there is a permanent exchange between

formal and informal learning, between theory and practice.

IV. CONCEPT OF USING DIGITAL LEARNING

This learning process of the students requires support by specially adjusted methodical concepts and fitting knowledge content. That is why digital learning should be used preferably.

Digital learning means learning with digital media for teaching as well as for learning people. It provides access to challenging content from different sources; allows feedback in different assessments. Finally, it provides the opportunity to learn anytime and anywhere. The trend is a development to a kind of learning in the cloud.

Many different tools, applications, technologies, and methods are included in digital learning to support and enable students and teachers. The didactical concept can be spread from online courses, blended or hybrid learning, virtual classroom, learning communities, or just content sharing, the use of digital content and resources. Additionally, digital learning can be used for professional learning and qualification to reach a special knowledge and competence level. This way it is focused to support the personal learning cycle.

By reaching this level of learning anytime and anywhere, the learning opportunities improve. The access to knowledge and education is easier.

Digital learning consists elementary of content, practice, and assessment components – the learning objects - like videos, audios, presentations, pictures, e-books, cross-linked through a wide range of methods and technologies, like authoring tools, learning (content) management systems, video conferences, digital learning games, content catalogues or content clouds. As those learning objects contain usually explicit knowledge, they can also be called knowledge objects. Out of these small, self-contained, and re-usable elements, hybrid learning arrangements for optimizing the learning can be built.

The quality of learning and the impact onto the learner always depends on the quality of the didactical and methodical concept of the material and its preparation. Media didactical concepts, like simulation of abstract contents, individualization of learning controls, or reusable learning objects are absolutely essential.

Digital learning offers, especially in distance education, are great chance to study independently from the locality. Therefore, it is easier or better supportable to reach a study degree and to force further degrees.

In a first step, it is necessary to see which knowledge the student has. This will be done on the basis of examination results and the associated credit points. From these facts, knowledge gaps (in relation to the course of study) of the students can be derived, and proficiencies can be recognized for the targeted course of study. To close these gaps, the missed modules can partially be realized via digital learning support. Thus, the student can learn individually and personalized.

The integration of work and study forces the experiential learning and with this a better internalization of the knowledge. Results are on one side a better study degree and on the other side an increasing experience.

In the other direction, when the work experience is collected for the recognition in the course of study, (digital) knowledge objects can be generated. If each student puts his/her working on project report in a special form, e.g. a wiki, all the reports can be cross-linked by a knowledge/semantic network. This offers a keyword-orientated knowledge base for further students.

V. CONCLUSION AND PROSPECT

The integration of workplace-related project work into extra occupational distance education is conducive to the recognition and transfer management at the interfaces of vocational and academic education and therefore meets the increased motivation for lifelong learning along with the claim for the validation of informal acquired learning outcomes. The increased utilization of digital media in the working environment, as well as in formal and informal learning processes, makes it essential to develop methodical and didactical concepts for using digital learning offers with respect to the aspect of quality assurance.

Further developments can grow in the direction of knowledge management. Feeding the work experience into a knowledge base is the chance to externalize the knowledge and offer it to other students. They can use it and partially internalize this knowledge, what represents the process described with the SECI-model by Nonaka/Takeuchi [8].

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