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Logistics Continuing Education: "Berufswertigkeit" and the Duisburg Model

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Abstract: The increasingly complex models and processes in logistics require more and more knowledge and competences by personnel in industry and retail companies as well as with logistics service providers. Within the largest European research endeavor in logistics, the "EffizienzCluster LogistikRuhr", funded by German logistics companies and the German Federal Ministry for Education and Research (BMBF), several individual research projects address the field of logistics knowledge and education management. Three of them form a close cooperation in order to support the innovative continuing education office "DIALOGistik Duisburg" in Europe's largest inland port of Duisburg, counselling and supporting all personnel from different logistics companies in the area. Based on an analysis part ("Berufswertigkeit" survey) several content and innovation models were developed addressing intermodal transport, sustainability in logistics as well as case-based reasoning in knowledge management. These are bundled to be disseminated in industry and retail by software tools and consulting services. The 2012 empirical study "Berufswertigkeit" in logistics with 1,068 participants and the subsequent development of a qualifications framework derived from EQF structures open a new field for logistics continuing education. The research results presented here will help researchers and practitioners alike in structuring and defining continuing education gaps and efforts in logistics competence fields.

Keywords: case-based reasoning; continuing education; corporate social responsibility; human resource management; logistics

JEL codes: A2, C8, L9, M5

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1. Introduction

As the world and the global trade flows change faster than ever, facing demanding requirements both by customers as well as environmental and CSR restrictions, logistics is itself changing fast amidst a technological revolution—some proclaim the fourth industrial revolution—bringing dynamic and self-reliable decision systems to sub-units of the supply chain ("internet of things"). The *research question* derived from these changes is the essential question if education and training of logistics professionals can catch up with these changes and how this contributes to the overall value provided by logistics availability in a global economy (Klumpp et al., 2013; Klumpp, 2012; Roth, 2012). From the onset of the largest logistics research endeavor in Europe, the German "EffizienzCluster LogistikRuhr", with more than 100 participating institutions and companies led by the Fraunhofer Institute (IML) Dortmund, the *strategic role of education and continuing education in logistics* was emphasized. Within a strategic research alliance three major projects addressed education and training questions in logistics in a coherent and role model concept in order to support the whole 'value stream of logistics education" with new research inputs (*Duisburg Model*, led by the University of Duisburg-Essen): From the analyzing and conceptualizing project WiWeLo (Scientific Further Training in Logistics) to the corporate knowledge management and information science project OrGoLo (Organizational Innovations via Good Governance in Logistics Networks) and the overarching topical project CoReLo (Integrated Corporate Social Responsibility Management in Logistics Networks) addressing sustainability education in logistics (see Figure 1).

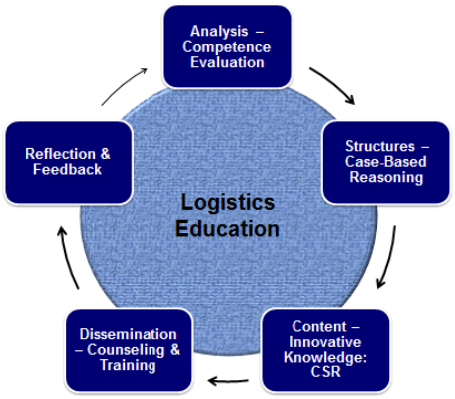

Figure 1 Logistics Education Circle Concept (Duisburg Model)

All these three approaches are outlined in order to give an overview over the unique setup and also results from these research projects—with the mission to change the way logistics companies think, plan and act regarding education and training of their employees in the future. Section 2 provides the key results from the large competence evaluation survey in the logistics industry, the German "Berufswertigkeit" survey with 1,068 participants ("Analysis"). Further on, section 3 discusses conceptual insights into the innovative concept of case-based reasoning in logistics ("Structures"). Section 4 describes the CSR knowledge requirements in modern logistics ("Content"), whereas section 5 outlines the DIALOGistik concept ("Dissemination") and section 6 the conclusion and further research impact.

2. Empirical Analysis: "Berufswertigkeit" Survey

The competence evaluation concept of "Berufswertigkeit" relates to the concept of employability and has

been coined and used in the first "Berufswertigkeit" survey in Germany in 2007 (Klumpp, 2007; Klumpp & Schaumann, 2007). The main objective of "Berufswertigkeit" is an objective competence measurement of a single person regardless of formal education degrees and backgrounds—therefore typical requirements of the business practice are used for evaluation. These criteria for an effective competence measurement are adapted from business practice. Hereby the different education degrees could be compared and the results are practice- and output-oriented. This measuring concept considers two important elements as listed here:

- First, it allows for a comparison of activities and competences in different industries in the real-life business practice;
- Second, it enables a comparable evaluation of individual persons' competences and their value for business practice.

The evaluation instrument "Berufswertigkeitsindex" includes 36 qualification requirement criteria that represent the modern daily work environment and are listed as follows:

1. Efficiency	14. Staff requirements and staff mission planning / staff development	28. Quality management (optimization of processes and products or service quality)
2. Independence and own initiative	15. Team, staff and leadership	29. Conceptual and strategic implementation of industry-specific knowledge and experience
3. Flexibility and adaptability	16. Improving responsible care	30. Identification with the company
4. Work virtues	17. Legal knowledge	31. Strategic orientation, determine/ control the complete company
5. Stress resistance	18. Ability to apply modern information- and communication technologies (work place)	32. Understanding of solutions for complex technical problems
6. Motivation and ability to lifelong learning and maintain to own competence profile	19. Communication and rhetoric	33. Basic knowledge of business administration
7. Coordinate the work- and lifetimes	20. Assertiveness	34. Perception of functions of management and organization
8. Creativity	21. International and intercultural competence	35. Conceptual working in immediate workplace
9. Loyalty	22. Costumer focus	36. Planning, control procurement and logistics processes
10. Risk-taking	23. Skills in mathematics and statistics	
11. Charisma	24. Preparation of cost estimates and quotations	
12. Ability to write and speak in German	25. Planning, implementation and documentation of orders and projects	
13. Knowledge of a foreign language	26. Negotiations capacity	
	27. Analytical problem-oriented work	

The "Berufswertigkeitsindex" is calculated by a summed and unweighted index of individual evaluations of the 36 qualification requirement criteria. The value range of the "Berufswertigkeitsindex" (BWI) begins with 0 and ends at 100 [0: evaluation of all criteria with poor and 100: evaluation of all criteria with very good]. The following equation (Klumpp et al., 2011, p. 7) represents the BWI calculation.

$$BW\text{-}Index = \left[5 - \left[\frac{Summation\ all\ reviews}{Quantity\ of\ BW\text{-}Categories}\right]\right] * 25$$

Index of sum
Range of values like starting scale (1-5)

Standardization of percent: 25 = ¼*100

Recording of range of values
0 = „inadequate" / 4 = „very good"

This equation includes a recoding as the achieved average value is subtracted from the value five. Hereby the highest achieved value is the numerical figure 4 and the smallest possible figure is 0. The normalized index 100% is calculated by multiplication by 25%. *Advantage* of this is the comparability of all persons and no prejudiced importance of one competence criteria over another. *Disadvantage* is an exchangeability of criteria which is

sometimes not realistic in business practice (i.e., if specific criteria are necessary for a person).

The output-oriented measuring concept "Berufswertigkeit" serves as a basic field-evaluation concept for the development of such an European Qualifications Framework (EQF) for the logistics industry and integrates the required investigation of competences (Klumpp & Schaumann, 2007). At the end of June 2011 a field survey with 1,000 persons within the German BMBF project WiWeLo, part of the "EffizienzCluster LogistikRuhr", was started. There are three types of survey instruments which could be executed such as written form, telephone and internet. Due to the experiences in the two "Berufswertigkeit" studies of 2007 and 2009 the project consortium decided for a telephone survey. The survey was executed in North Rhine-Westphalia and Hessia. Both states depict a very good representation of the whole country of Germany—as they are both no city states and have no major economic restrictions (e.g., East Germany) but also a representative combination of modern service centers (Frankfurt, Cologne, Düsseldorf), older industrial clusters (Ruhr Area, Rüsselsheim) as well as more rural areas (North Hessia, Westphalia). Since January 2011 the survey was in preparation by development of the survey instrument, a chance-sample of addresses of the logistic industry in both states was drawn. The telephone survey of 1,067 persons begun end of June and took place till September 2012. The interview survey can be found in Klumpp et al. (2013).

Altogether 808 persons in North-Rhine Westphalia (NRW) and 259 persons in Hessia with different education levels were asked. Therein existing skills and competences of persons in the logistics industry will be described and the above mentioned draft for an industry qualifications framework logistics will be reworked. Also traditional formal degrees in vocational and academic education will be classified according to evaluated practical competence levels. Finally 1,068 persons from the logistics sector were questioned and these represent 379 female and 689 male respondents. 75.7% of the respondents are from North Rhine-Westphalia and the remaining 24.3% are from Hessia. The respondents represent various professional levels at their current working place. 88.6% are employed as white-collar workers in different levels like branch managers, team leaders and office clerks in their company and 11.4% work as blue-collar workers in warehouses or as truck drivers. The Figure 2 shows the "Berufswertigkeitsindex" which significantly presents that 80% of the competences of 21.8% blue-collar as well as white-collar workers in Hessia are higher evaluated than blue-collar as well as white-collar workers in North-Rhine Westphalia, hereby it is to assume that the German federal state of Hessia indicates a very specialized logistics area by Frankfurt Airport.

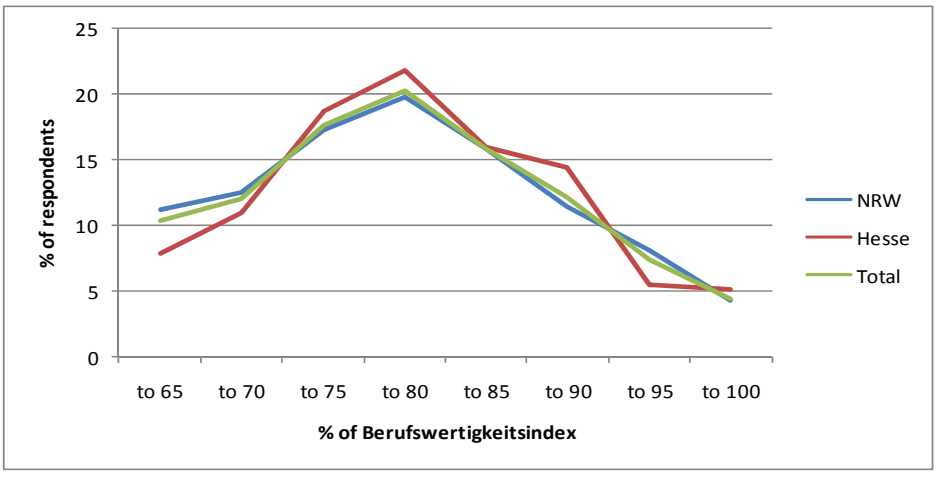

Figure 2 "Berufswertigkeitsindex" for the Logistics Industry (NRW and Hessia)

Furthermore Figure 3 presents the "Berufswertigkeitsindex" of six different fields of logistics business activity in the logistics industry of the 1,068 respondents. It can be noticed that in four fields of logistics business activity a value of more than 75% to 80% namely 26% office clerk, 21% administration level, 19% group leader and 18% managing director is achieved. 40% blue collar-workers indicate a "Berufswertigkeitsindex" of 65% to 70%. 21% academic staff specifies a "Berufswertigkeitsindex" of 80% to 85%.

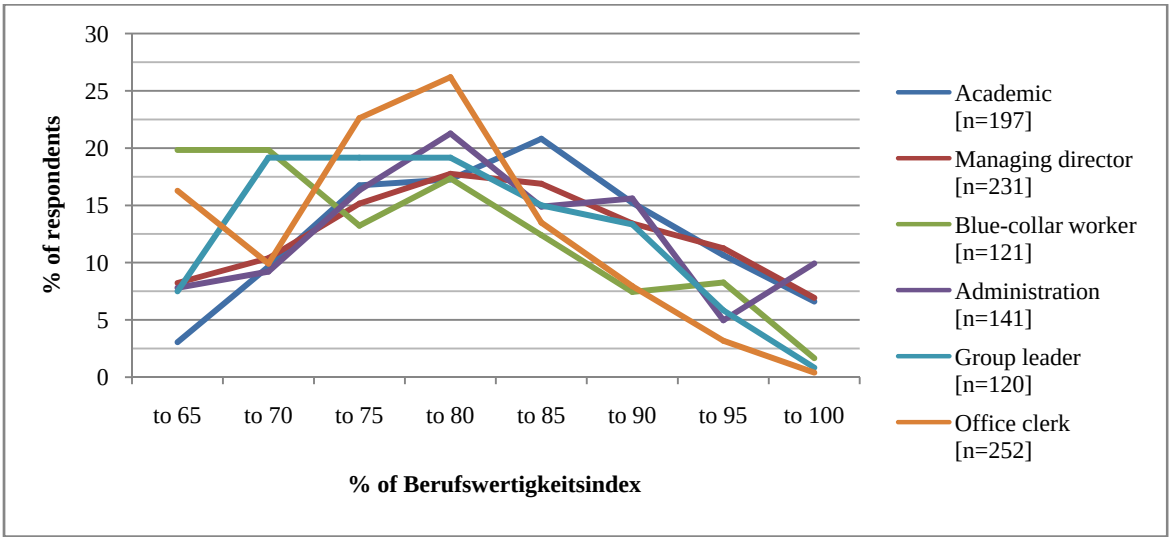

Figure 3 "Berufswertigkeitsindex" Based on Field of Logistics Business Activity

Figure 4 presents the curve of the "Berufswertigkeitsindex" (BWI) across all age groups. The curve that presents the respondents with the age of up to 25 years indicates a high BWI with 75% to 80%. This group estimates themselves with a high BWI due to their specific logistics education and possibly their internet knowledge. In the remaining age groups the curve are flat compared to that. The BWI is equally distributed in the value of 65% to 100%. All graphs of the age groups except the age groups between 46 to 55 years old run in parallel. The remaining age groups achieve the highest BWI with 75% to 80%. The results show that 18% of respondents in the age of 46 to 55 years have a BWI of 70% to 75%. As could have been expected only 2% of the age group till 25 years achieve 95% to 100% and 8% of the age group older than 55 years old has the highest BWI of 95% to 100%.

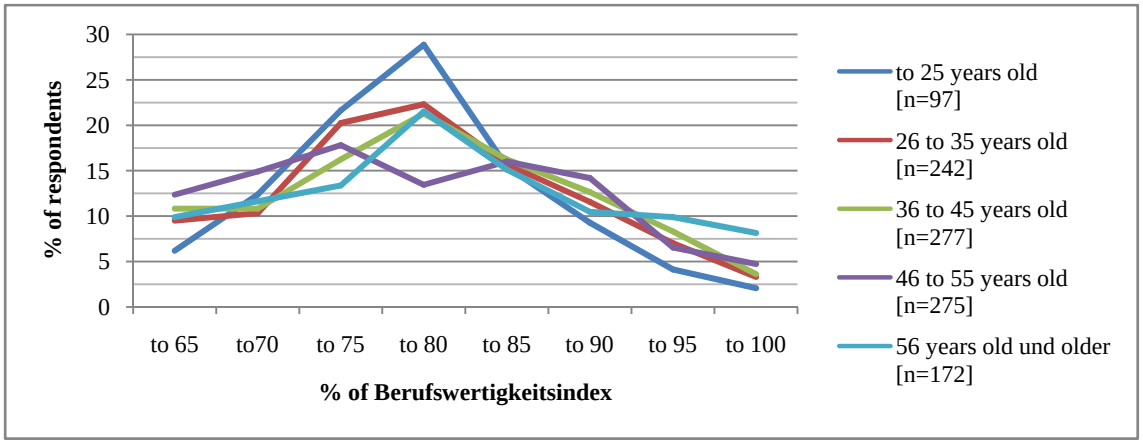

Figure 4 "Berufswertigkeitsindex" Based on Age of the Respondents

The following figure shows the BWI based on the group of school graduation. The results are as expected the “Berufswertigkeitsindex”. 26% of the respondents with a high school graduation (ISCED level 2—German “Hauptschulabschluss”) specify a BWI of 65%, followed by 21% of the respondents with a high school graduation (ISCED level 3—German “Realschulabschluss”) who declare a BWI of 75% to 80%. The highest BWI between 95% and 100% is quoted by 6% of the respondents that achieved the A-level graduation (German “Abitur”).

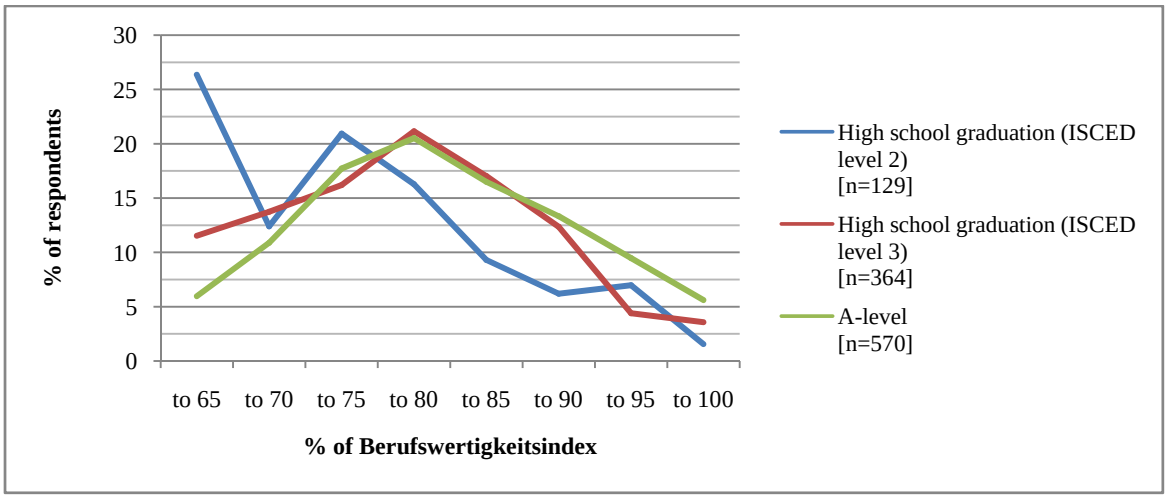

Figure 5 “Berufswertigkeitsindex” Based on Graduation of the Respondents

In connection with this first empirical evaluation of logistics competences in a field survey the research cluster set out to establish knowledge management tools (e.g., CBR, section 3), knowledge content (e.g., sustainability, section 4) and knowledge and education systems (e.g., DIALOGistik, chapter 5) in order to *enhance* the competences of logistics employees.

3. Knowledge Management Innovation: Case-based Reasoning in Logistics

3.1 Knowledge Management Research Gap

A key requirement of knowledge management, that has been brought forward repeatedly within the scope of business economics as well as in the field of business & information systems research, extends to the reuse of knowledge. Primarily because of two reasons it is recommended to apply the knowledge, which has been acquired in the past to solve problems in business practice, for dealing with new problems as far as possible. Firstly, it would be economically inefficient to re-invest the resources that were used for the initial acquisition of knowledge in case that a reuse of this knowledge for solving new problems is omitted. Secondly, learning curve effects attained by repeated usage of similar knowledge components could not be exploited in such a case of omission.

Despite the obvious economic advantages, the demand for a systematic reuse of knowledge is often not implemented in operational practice. The intended reuse of knowledge normally only succeeds with good structured and often quantitative factual knowledge (“know what”) that, for example, can be saved easily and that can be recalled straightforwardly for the purpose of problem-solving (re-)use with the help of conventional data base systems. In the case of poorly structured and normally qualitative knowledge represented mainly in natural language and extending especially to competences in the sense of action-enabling knowledge (“know-how”) and

to “everyday theories” for the pragmatic explanation of processes and systems (“know-why”), the recommended reuse of knowledge is, however, confronted with substantial barriers time and again.

These barriers are mainly based on three reasons. Firstly, it is difficult to save and recall qualitative knowledge that is predominantly represented in natural language using conventional database systems (problem of qualitative knowledge). Instead, in the best case it is filed as explicit knowledge in natural language documents (free-formatted “texts”). In the worst case it is even only locked up as implicit knowledge “in the minds” of some professionals (“experts”). Secondly, in the event of a new occurring problem it is very intricate to assess whether it is similar enough to older, already solved problems so that it can be—at least partially—worked out with the knowledge gained from the solving of older problems (problem of sufficient problem similarity). Thirdly, the knowledge, that is generally available in a company on the matter of successfully (or deficiently) treating previous problems, is so extensive that in business practice it is barely possible to realize a systematic reuse of knowledge without computer support. The usage of computers in the field of knowledge management often fails in reality because of the need of being able to process qualitative knowledge that is predominantly represented in natural language (problem of computer support).

3.2 CBR Project Set-up

Researchers at the University of Duisburg-Essen have developed an ontology-driven and case-based reasoning tool that can help to solve or at least to alleviate the aforementioned problems of qualitative knowledge, sufficient problem similarity and computer support from the perspective of operational practice. The case-based reasoning technology (Aamodt & Plaza, 1994; Watson, 1997; Avramenko & Kraslawski, 2008), that originates in the research of artificial intelligence, has been selected as an approach to problem solving, because of two reasons. Firstly, it shows a “natural”, direct connection to the both last-mentioned problems. Secondly, it can be ‘enriched’ especially with the help of ontologies (Guarino, 1997; Lin et al., 2011; Zelewski et al., 2012) so that it also shows interesting potential for the first-mentioned problem. Both technologies, the case-based reasoning and the ontologies, have been explored largely independent of one another until now, because of their—at least prima facie—different fields of application. From the point of view of business economics, they have been hardly applied—also within knowledge management—for the solution of practical problems. Hence, the innovative approach lies in the combination of case-based reasoning and ontologies in such a way that they can be used computer-supported for the solution of practical problems. In the context of the joint research project “Organizational Innovations via Good Governance in Logistics Networks” (OrGoLo) it is examined how the management of complex, especially international logistic projects can be supported by such innovative instruments of knowledge management in order to enable logistics companies to achieve sustainable competitive advantages.

3.3 CBR Methodology

Case-based reasoning imitates human thinking trying to make a decision based on earlier experiences. The idea of case-based reasoning can be formulated in one sentence: a case-based reasoner solves new problems by reusing solutions that were used to solve similar problems in the past. Problems are generally thematized as cases in the context of case-based reasoning. This specialized terminology is used here for the sake of compatibility with established literature. Each case consists of three characteristic components: the case description (problem description), the result (problem solution) and the evaluation (evaluation of the problem solution). Projects can be seen as a special case of such cases. Therefore, in the following the terms “problems”, “cases” and “projects” can be regarded as synonyms. The knowledge of experience about already conducted logistics projects (old cases) is

stored in the knowledge base (or synonymous case base), i.e., a knowledge base containing the descriptions, results and evaluations of all old cases. The typical case-based reasoning process based on the knowledge stored in the knowledge base is usually divided into four phases of the so called CBR cycle (Aamodt & Plaza, 1994): retrieve, reuse, revise, and retain (see Figure 6).

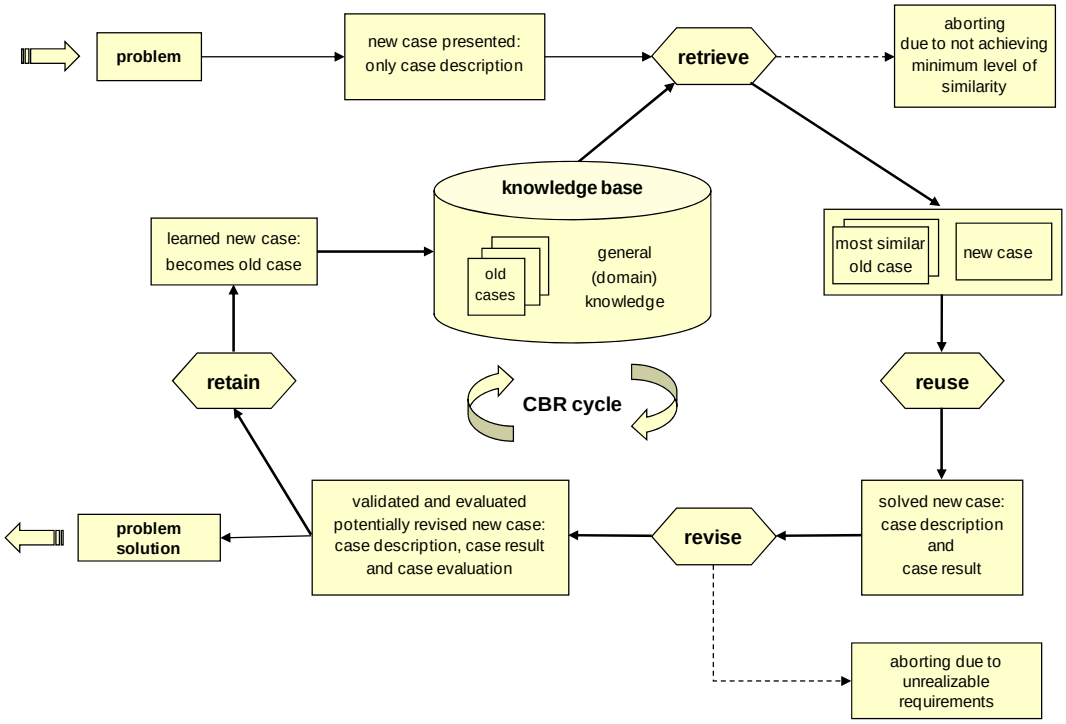

Figure 6 The CBR Cycle (Aamodt & Plaza, 1994; augmented in Kowalski et al., 2012)

The description of a new case is used to search for at least one sufficiently similar and—if there exist several sufficiently similar cases—at least one most similar case in the knowledge base (retrieve). Having found such a sufficiently and most similar case in the knowledge base, it is adopted to the new case (reuse). The quality of the adoption result must be evaluated with respect to user requirements and must therefore potentially be modified (revise). The description, result and evaluation of the new case are combined in order to form a "learned new case" which is stored in the knowledge base (retain).

3.4 Prototyping and Implementation Experiences

A prototype CBR tool called "SCM Project Recommender" (Kowalski et al., 2012; Kowalski et al., 2013) was developed using the CBR development and application framework jColibri. This prototype has been customized in a first stage of development in order to collect knowledge of experience on complex, especially international logistics projects as well as to review it in the special knowledge representation form of cases. In the center of the development work were real projects of practice partners which concerned the management of international supply chains (SCM projects). This included, e.g., the suitable packaging for shipping of components of a polar research station and their carriage by sea from Duisburg to the Antarctic and also the multi-modal transport of DIY-products from their factory in the middle of China to their distribution centers of a well-known trade chain in Germany.

The CBR tool is planned to be embedded into a "Collaboration Platform" together with the "Supply Chain

Configurator” (Robles et al., 2013), which are developed in the joint research project OrGoLo as two further tools. The collaboration platform is supposed to support especially small and medium-sized companies with the efficient processing of foreign trades. Such foreign trades are often multi-layered and very complex. For example, forwarders are confronted with great challenges concerning import and export prescriptions, especially customs regulations. The resulting burden of responsibility creates substantial requirements of knowledge empowering to act as well as communication among different stakeholders from numerous branches, nations and economic cultures. By developing the collaboration platform a solution for these challenges is presented, which realizes the idea of “good governance” (Lautenschläger & Lautenschläger, 2013) concerning complex logistics projects in international supply chains. The collaboration platform will provide a modern assistance tool for planners, dispatchers and controllers for their intensive cooperation with suppliers and logistics providers. This tool is supposed to preserve for them the power of disposal over their supply chain data at any time, to ensure an efficient use of decentralized available competences for individual supply requirements and to allocate knowledge of experience on already realized logistics projects for continuous organizational learning.

The three previously mentioned tools in support of the knowledge management for complex, especially international logistics projects are tested and evaluated in the context of the joint research project OrGoLo on the part of the continuing education office DIALOGistik Duisburg together with partners of the business practice, and developed further in accordance with practical requirements. In general, the DIALOGistik office serves as an innovative institution within the inland port of Duisburg in order to establish a central contact point, especially for small and medium-sized enterprises, for aspects of know-how transfer, qualification and supply chain efficiency.

Beyond that it serves for building up a sustainable relation between the University of Duisburg-Essen and local logistics companies, for creating a community of knowledge exchange between practitioners, scientists and other stakeholders, and for enabling knowledge generation and knowledge transfer from science to business and vice versa. In the context of the joint research project OrGoLo, the DIALOGistik office helps to organize and to coordinate the collaboration between scientific and practical partners considering an exchange of experience knowledge, to identify potential business users, willing to participate in a pilot period for the developed software tools, and to promote the developed software tools during and after the initial joint research project OrGoLo.

4. Content Innovation: Sustainability Education in Logistics

4.1 Sustainability Requirements in Logistics

Logistics companies, due to their integration into the global value chain, are confronted with the term sustainability, i.e., the challenges of economic, social and ecological responsibility. In the international debate the meaning of this term converges—at least on the company level—with the concept of “Corporate Responsibility” (CR). The growing public awareness for social and environmental standards, the emergent relevance of ethical and eco audits and the necessary preservation of resources and energy efficiency caused by the climate change make sustainability and CR concepts which are geared specifically to the needs of smaller and medium-sized logistics companies and supply chain networks a necessity (Geßner et al., 2013).

As the connecting link in global value-creation processes, the logistics sector is confronted with the social, ecological and economic demands of sustainability and CR in a particular way. Firstly, the knowledge gained from climate research on the basis of greenhouse gas (GHG) emissions demonstrates that it is especially the transport sector that suffers from a discrepancy between the actual and the necessary development: On the one hand the

transport of goods and persons causes world-wide just over 13% of GHG emissions, in the EU-27 this percentage totals even 24%. This fact is aggravated by the circumstance that, depending on the individual projection, an increase in the rate of freight transports within the EU by up to a further 80% is expected by 2050. Secondly, “stuck in the middle”, the customer oriented logistics industry has to find solutions to the increasing sustainability and CR requirements that producing companies are facing, while at the same time price is expected to stay low and performance to raise. Thirdly, the logistics sector is primarily made up of small and medium-sized enterprises (SME) and is typically characterized by highly interdependent international network structures, which are structured and organized to greater and lesser degrees, but always highly competitive. Last but not least, the logistics sector faces severe skills shortages; especially against the background of the growing lack of skilled labor in logistics, sustainability and CR strategies, e.g., in human resources, are considered decisive to increase the attractiveness of the sector and to recruit and retain new staff members (Meyer & Schmidt, 2013).

4.2 Project Results

Preliminary project results give evidence that SME are quickly overburdened or confused by the many understandings and notions of sustainability and CR and the standards, types of certification and monitoring programs (Meyer et al., 2012). This is an important fact in combination with the dominant economic mindset “If it matters, it’s measured”. Measuring sustainability performance is a heavy task, because the “business case” is hardly to be demonstrated on the basis of the ordinary economic framework of key performance indicators. That’s why up to now sustainability and CR strategies are difficult to implement, especially when companies want to take into account the internalization of social and ecological costs within highly competitive logistics market structures. The crucial lesson to be learned is that an integrated sustainability and CR approach rather relies on a supporting corporate culture. This can be prominently illustrated by means of the standard “ISO 26000 Social Responsibility”. This new standard, launched in 2010 following five years of negotiations between many different stakeholders across the world, provides “only” guidance rather than requirements: It cannot be certified to unlike other ISO standards.

In fact, the project result implies that sustainability and CR approaches require structural stimuli that take into account the cultural specifics of logistic companies. The integration of sustainability and CR topics into the organization proves a major challenge for a company’s structure. A fundamental requirement is the commitment to sustainability and CR approaches of the top-level management. Furthermore it will be not sufficient that there is only one sustainability and CR officer. The risk seen in this is that such a person may exhibit a “tunnel vision” that makes him or her less susceptible to the necessities and contradictions of day-to-day business operations. The topic should instead be borne as a topic that touches on every part of the entire organization. This means to set the lowest possible inhibition threshold, e.g., by explaining sustainability and CR as a cross-cutting issue that can be integrated into the daily routines of every employee. Therefore sustainability and CR management should be structurally embedded into the different junction points within the organization. In brief: “Sustainability and CR-education” implies that corporate culture and corporate strategies concur, which means it has to be differently designed and developed for every individual company.

The goal of the project is to prove that value-based socio-ecologically responsible supply chain networks enjoy an innovative corporate culture and are marked by lower susceptibility to interference and boast an improved co-ordination potential, higher employee motivation and social reputation. In general this could lead to competitive advantages and new market opportunities on the basis of sustainable management. Most companies already consider service, reputation, cost, security, and safety when choosing logistics service providers.

Sustainability is on the way to be added to the list. To become a champion in the logistics industry it will be clever to become a sustainability champion. The companies that will look at the current economic conditions not as a problem but as an opportunity for their organization will be best prepared for future challenges—time will tell if this assumption can be confirmed.

5. Dissemination and Cluster Approach: DIALOGistik

5.1 Duisburg—Via Structural Change to One of the Most Important Centers of Logistics

Logistics is classified as an industry of the future with significant growth potential not only nationally, but also for the regional economy, because with the globally networked division of labor, the logistical performance of a region takes on the role of an important location factor. It is well known that with its large urban metropolises such as Duisburg, the Ruhr Area has been undergoing a major structural change for the past few decades. In the meantime the city of Duisburg has developed into a center for logistics, commerce and services, which with the Rhine-Ruhr port as the largest inland port in Europe (with round about 40 thousand employees) has become a regional logistics hub with a considerable amount of charisma.

5.2 WiWeLo Opens Innovation Corridors by Tailor-Made Qualifications

The joint research project “Scientific Further Training in Logistics” (WiWeLo) is a research project sponsored by the Federal Ministry for Education and Research (BMBF) as part of the Excellence Cluster Competition of the Federal Government (High-Tech Strategy) and is a partial-project of the “EffizienzCluster LogistikRuhr” which focuses on the occupational qualification and further education of companies and undertakings. This topic has been chosen, because of inadequate competence on the employees’ side in the logistic industry. The core of the underlying philosophy of the project WiWeLo is the working hypothesis that innovation corridors (technical and organizational, personnel) can only be sustainably opened up by appropriate training measures. However, this implies a scientific analysis of the content dimensions that are to be communicated, likewise a process-related supervision and a testing of the appropriate measures, as well as the evaluation and documentation of the results and effects achieved. Ultimately this involves the development, implementation and evaluation of models of tailor-made, demand-based qualification concepts. Foundations of the conceptual development are scientific analyses of the target corridor of requisite qualification requirements for specific operational target groups on different levels of the job hierarchy.

5.3 DIALOGistik Duisburg between University and Logistics Enterprises

Since the scientific project work would be difficult to implement without institutional support, a service organization is being established for knowledge transfer, qualification and logistics efficiency, namely DIALOGistik Duisburg with headquarters in Duisburg. In this organization the project activities of the participating partners are bundled together, so that it acts as a communication platform between science and practice. With the institutionalization of DIALOGistik Duisburg, a company-related network is being implemented which sees itself as a communication platform from the perspective of bundling information, knowledge and product results at the site of the Port of Duisburg and making this available for the transfer to the regional players. From a company-related perspective it will act as a location for the design of further training and education in the context of company personnel policy in order to increase the knowledge base of the employees through work-place-related training and thereby make a contribution to a data-based improvement in the transparency of the regional training and employment market. The innovative approach of DIALOGistik Duisburg

can therefore also be seen as a conception of exemplary, certified training measures in a communication process involving all network partners who are intended to enable permeability between academic and vocational training. The goal is not only to increase the value of vocationally acquired skills through formal recognition processes, but also improving operational and inter-company mobility and opportunities for promotion for employees through extended options within the personnel deployment concepts associated with personnel policy. The consolidation of operational interests with respect to the use of their workforces, as well as individual employee interests in terms of their training and employment aspirations from the point of view of operational and workplace-related career structuring, can be seen as the core tasks of the work of DIALOGistik Duisburg.

5.4 Four Task Areas of DIALOGistik Duisburg

The concept of DIALOGistik Duisburg can be broken down into four different task areas:

- The first field of activity is a place to exchange experiences between different partners in the logistics industry, and at the same time an interface with other sectors on the peripherals of logistics that are integrated into the logistics value chain (“supply chain”). Through various procedures and tools of community building, special targets are incorporated into a communication process that deals with subject areas which are relevant for practical applications and searches for appropriate solutions to problems.
- This exchange process is accompanied by the element of the dialogue between science and practice in order to define new contents and fields of work to create a benefit of all players and feed these in turn into the communication process.
- A further range of tasks is an operational and individual consulting and coaching along educationally-relevant issues such as vocational, training and health advice.
- This deals with the central aspect of the design of logistical education and training, with the focus of this range of tasks being on the provision of support services for small and medium-sized enterprises, which can in particular offer these businesses cost advantages and synergies within the framework of joint learning networks.

5.5 Instruments, Measures and Institutions

On the one hand the aim is to create transparency in the regional education market, while on the other hand it is necessary to solve matching problems between specific company qualification requirements and further training offers outside the companies. In this context an education monitoring, which is currently under construction, will be operated as a permanent regional monitoring and evaluation tool by DIALOGistik Duisburg and will make a valuable contribution. Coupled to the monitoring facility will be an online platform, a logistics wiki, which will provide port-specific knowledge in a compressed and practically-relevant form in order to enable the faster and smoother cross-company transfer of knowledge. The nucleus of the project is the identification of tailor-made education and qualification measures. For this purpose it is necessary to carry out systematizing scientific analyses, which usually implies a multistage procedure for obtaining empirically reliable information. From this it follows that in the future, increasing convergence between operational requirements and the training offered by the regional further training institutions should be initiated by DIALOGistik Duisburg in order to promote the Port of Duisburg site and push forward with the projected aim of a professional school and port academy. At the same time an employee pool could be established for the Port of Duisburg to enable cross-company mobility of the workforces, secure continuous employment and avoid that qualified workers move to other companies.

5.6 Goals, Perspectives and Synergies

Up to now the project results show that it has been possible to explore in greater detail the operational qualification requirements of companies. It has also become clear that companies are currently not in a position to

define these requirements by themselves, let alone cover them. For this reason, the external support of the project is required. This also addresses the aspect of linking operational learning processes and human resource strategies, which the project has found to be a key range of tasks for DIALOGistik Duisburg. This is where the joint research project WiWeLo comes in by setting itself the task of developing tailor-made, modular-certified and transferable qualification measures in a close dialogue with company experts for different target groups in order to draw up an overall training concept that is marketable and accepted by the market in the field of “intermodal transport” and inland waterways. The point of reference here is to widen the bridge from vocational qualification to academic education in order to meet the requirement for more permeability in the education system and enable more individualized educational mobility for the purposes of opening up wider professional and career opportunities. Through the project work that it has already begun the joint research project WiWeLo is making an important contribution to the overall direction taken by the “EffizienzCluster LogistikRuhr” by initiating new impulses through qualification concepts and the synergetic release of innovations in research, development and cooperation, which can make a contribution by means of “more intelligent logistics solutions” and support the strategic goal of the “EffizienzCluster LogistikRuhr”.

5.7 The Multimodal Logistics Expert—A Research Model for Scientific Further Education

The first trial run of the scientific further education “Expert for Multimodal Logistics” was completed in April 2013. This training was designed in accordance with the demand of Duisburg local logistics enterprises, recorded in expert talks. Participants of the course filled in a questionnaire about the contents of the lessons, methods of teaching, performance of the lecturer etc. At the same time, the lessons were supervised by scientific assistants, monitoring the interaction between lecturers and participants. After the end of all lessons, there were workshops separately for participants and lecturers. The results will be reflected and discussed with managers of logistics enterprises and integrated in a new concept for a sustainable further education “Expert for Multimodal Logistics”.

6. Conclusion and Impact

The described integrated approach towards logistics education on a systems-level perspective can be acknowledged as a new and innovative concept which is expected to have major influence especially on a regional level within modern cluster approaches in economic development and support. As increasingly public authorities follow this cluster and branch or discipline approach, the need for such an integrated system view is obvious; and many regions as for example the region of Duisburg—respectively the Ruhr area—are going to look out for such approaches.

For Duisburg it is expected that the whole logistics cluster is headed towards a joint “employment pool”, where workers are going to be supported in their education efforts regardless of specific company affiliation—and therefore will be able to transfer more easily and faster between different companies in accordance to the logistics business needs within the whole cluster area. This was specifically recognized in the economic downturn of the 2008/2009 crisis a significantly smaller number of employees than expected lost their jobs permanently within the area of Duisburg.

Further on the analysis and standardization efforts within the Duisburg and Ruhr cluster research is directed at establishing an Industry Qualifications Framework (IQF) for logistics modeled on the European Qualifications Framework in order to support especially SME in the logistics industry in their human resource and training management efforts (Klumpp, 2013).

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