

The logo features three overlapping speech bubbles in shades of blue and white on the left. To the right, the text 'Coop' is in a simple sans-serif font, 'PBL' is in a larger, bold sans-serif font, and 'in VET' is in a smaller sans-serif font below 'PBL'.

Coop
PBL in VET

Manual for promoting *project- and practice-based* learning in vocational education and training (VET)

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1. Manual for promoting project- and practice-based learning – *What is it about?*

The Manual is one of the main products of the European cooperation project “COOP-PBL in VET”. The project was launched as a trans-national “Transfer of Innovation” project with partners from Spain (Basque country), Finland, Germany and Hungary. The aim is to promote *collaborative learning technologies* and concepts for *project- and practice-based learning* in initial vocational education and training (VET).

The project has studied current approaches to problem-, project- and practice-based learning in Higher Education (HE) and in Vocational Education and Training (VET). At the same time the project has explored the use of collaborative learning technologies as means to support project- and practice-based learning arrangements. Firstly this work has been linked to further use of products that have been developed in earlier European projects (e.g. the *Knowledge Practice Environment (KPE)* as a working environment and the *Moodle-based “toolbox”* as a supporting resource base). Secondly the project has developed new ways to *promote project- and practice-based learning* and *use of collaborative learning technologies* by launching national pilot projects or cooperation initiatives.

As a result the Manual provides short answers to the following questions:

- Why has the value of “*learning through work experience*” been rediscovered in the recent European educational debates?
- What kinds of approaches to *problem-, project- and practice-based learning* can be identified *and* how have they been put into practice?
- What is the role of *collaborative learning technologies* as support for such pedagogic approaches?
- What kinds of *new initiatives and pilot activities* can be reported from the participating countries *and* what lessons have been learned?

The other results of the project (available via the web platform <http://coop-pbl.com> or the KPE shared spaces or the Moodle resource base) provide deeper insights into these issues and into the achievements of the project.

For whom and why: The Manual has been prepared as introductory material for vocational teachers, in-company trainers and decision-makers who are responsible for the development of vocational education and training. The Manual gives a compressed picture of *current issues* and *main developments* across Europe. The Manual helps the stakeholders (from schools, enterprises and policy bodies) to *identify key messages* that arise from the work of the European project.

In this way, the Manual doesn’t present “the one best way” for promoting project- and practice-based learning. Instead, it helps teachers, trainers and decision-makers to find their own models for developing cooperation and new learning concepts.

2. Rediscovering the value of learning through work experience – *What is the point?*

Ever since the Lisbon Summit 2000 the European policies for education and training have been concerned of skill gaps and skill shortages in Europe. The aim of new policies has been enable better matching between *education and training systems* and new needs in the labour market. This led to new coordination mechanisms to promote European *transparency of Higher Education systems* (the Bologna process) and *transparency of vocational qualification frameworks* (the Copenhagen process). In addition, the debates on skill gaps led to European initiatives that focused on early recognition of new skill needs or to initiatives that promoted the development of new e-learning provisions (for learning alongside work).

Altogether these initiatives tended to put the emphasis on

- making education and training provisions fit to respond to new skill needs *or* on
- on finding new ways to provide learning opportunities alongside working.

In the recent years educational debates and new initiatives have led to the following shifts of emphasis:

- a) It has not been enough to strengthen universities (and educational institutions) as providers of new knowledge. There is a need to *support knowledge processes (acquisition, enrichment and utilisation) in work organisations.*
- b) It has not been enough to equip graduates from education and training with knowledge and skills required at the labour market. It is necessary to *integrate **learning through work experience** into vocational and higher education.*
- c) It is not enough to promote pre-designed web products and e-learning models for target groups in working life. It is necessary to explore, how *web resources and collaborative learning technologies can support work-related learning.*

All these shifts of emphasis bring forward new requirements for learners: ability to work in teams, to communicate between teams, to identify and solve problems in working life. They also draw attention to self-organised learning, time management, creativity and self-assessment.

Key message:

The latest developments in education and training shift the emphasis to partnerships and both-sided cooperation between educational actors and work organisations. This is needed at the level of higher education and in the education and training of skilled workers. The key point for shaping project- and practice-based learning is to bring *real life problems to the centre of vocational and professional learning cultures.*

3. Diverse approaches to problem-, project- and practice-based learning – What origins, guiding principles and action contexts?

The educational ideas linked to problem-, project- and practice-based learning have a long history across different pedagogic reform movements. In general these ideas have been raised as a challenge against rigid subject-driven and teacher-led curricula in schools and higher education. Yet, as educational history demonstrates, many attempts to mainstream these approaches as guiding principles for educational reforms have led to rigidity and to protests from the next generation of reformers.

In the recent years the wordings ‘problem-based learning’, ‘project-based learning’ and ‘practice-based learning’ have been linked to more specific innovation concepts and movements. Some of these focus exclusively on higher education or vocational education, whilst others are influential in both contexts. Some of them have become consolidated reform movements with their own standards whilst others are still taking shape. From the conceptual point of view they approaches have a lot of similarities with each other. Yet, it is worthwhile to be aware of the different origins, guiding principles and action contexts.

The following sections of the Manual will present in more detail three parallel approaches and related reform agendas:

- **Problem-based learning** in higher education is a relatively established innovation movement. It has gained support in reform universities and specific faculties. The aim of this movement is to transform the curricula in such a way that discipline-based courses are complemented by seminars for problem-based learning and by project phases. This complementary relation characterises the whole curriculum.
- **Project-based learning** (or project-oriented learning) in vocational schools is being promoted by different approaches. Some of these are working with small-scale learning assignments (with emphasis on work tasks) whilst others are working with umbrella projects (and emphasis on project management skills).
- **Practice-based learning** in vocational education and training focuses on the cooperation between learning venues (school and workplace) in a dual system of apprenticeship. Here the main emphasis is on integrative working and learning tasks and on integrated umbrella projects (that are carried out in both contexts).

The characterisations above are rough ideal types. The following sections will bring more features to the picture. Yet, for the sake of developing cooperation between educational actors and work organisations it is essential to know in what ways these approaches count on both-sided cooperation and on significant participation of learners in work organisations.

Key message:

The three approaches reflect the different possibilities of higher education institutes, vocational schools and apprentice training programmes to develop work-related learning arrangements. They all can be seen as a step from school-based learning towards incorporation of real life problems and work experience into the learning career. Yet, the specific potentials have to be identified with a closer look.

4. Problem- and project-based learning in Higher Education – *What impulses for Vocational Education and Training?*

Problem-based learning (PBL) or Problem-and Project-Based Learning (PBL/PjBL) is a well-known pedagogic innovation movement in Higher Education. It has mainly spread out from newer reform universities and has specific manifestations in several faculties (e.g. for medical sciences or for engineering). A major promoter of PBL is the European Society for Engineering Education (SEFI) with its working group for quality standards in PBL. Regarding the adaptation of PBL as a guiding principle for the whole university, the most prominent example is the Aalborg University (Denmark) with its policy paper “Principles of Problem and Project Based Learning. The Aalborg PBL Model”, September 2010.

The Aalborg policy paper provides a brief introduction to the specific concepts and terminology, to the educational vision and to the role of diverse actors and boundary conditions (curriculum, students, faculty, assessment of students, resources, program administration and external relations). It also draws attention to the role of educational research in supporting pedagogic development.

Concerning the implementation of problem- and project-based learning **across the curriculum**, the **Aalborg policy paper** outlines the following principles¹:

- “Each program consists of an appropriate balance of orientation courses, study courses, and project-related courses which accompany the students’ project work.”
- “In each term, a theme is selected to serve as the context in which project courses and projects address the learning objectives.”
- “In each term, a number of project courses are offered, linked to the educational objectives and shaped by the term’s theme.”
- “The curriculum provides adequate means for students to establish connections between the specifics of the project courses and project work and the broader knowledge and skills of the discipline or profession.”
- “The institution encourages students to collaborate with external businesses and organizations for example through work placements or internships (...).”

The principles that have been presented above are significant for the curriculum architecture and for the learning culture. Thus, the students are expected to mobilise their knowledge to work with real life problems and to make progress in this respect during their years of study. However, the degree to which students are engaged with work organisations (enterprises or public bodies) depends on the specific project concept and the project dynamics. In some cases this may lead to intensive cooperation (e.g. the engineering students’ project that examined problems with sewage in certain part of Aalborg including intensive field studies).

Key message:

For Vocational Education and Training it is interesting to see, how consequently some Higher Education Institutes can combine a model of Problem- and Project-Based Learning to their curriculum architecture and to the cultures of domain-specific learning. Yet, it is essential to note that in this context the projects were seen as interventions in which the students make use of their academic and project-oriented knowledge to provide solutions for given problems.

¹ See Aalborg University 2010: Principles of Problem and Project Based Learning. The Aalborg PBL Model, p. 11-13.

5. Problem-based learning in vocational schools – *How to prepare the grounds for self-organised learning?*

The previous section discussed the possibilities of Higher Education Institutes (i.e. universities and faculties) to adapt principles of problem- and project-based learning across their curricula. When it comes to the role of vocational schools in promoting problem- and project-based learning, it is worthwhile to note some restrictions. Firstly, the duration of vocational programmes is shorter. Secondly, the role of vocational schools varies between that of autonomous educational establishments and that of supporting providers of education (in apprentice training). Thirdly, the expectations to what degree vocational programmes can provide access to full vocational and professional qualifications varies. Finally, the traditional training and learning cultures have emphasised the role of guidance and supervision – not self-organised learning. In this respect the approaches to problem- and project-based learning in vocational schools cannot be seen as a coherent innovation movement but as **manifestations of similar change agendas**. Below, different elements of such change agendas are outlined and described briefly (and with reference to specific German developments).

5.1. From instruction-driven training to support for self-organised learning – *the emergence of the Leittext methodology*

The cultural shift from instruction-driven training methods to support for self-organised learning can best be illustrated by the emergence of the *Leittext* methodology in the German training culture².

By the 1970s the dominant approach to training was the so-called 4-step methodology:

- 1) **Explain** the task based on your knowledge as a trainer (*Erklären*),
- 2) **Present a model** for working with the task (*Vormachen*),
- 3) Let trainees **imitate the presented model** (*Nachmachen*),
- 4) Let trainees **practice** to improve their performance (*Üben*).

In the pedagogic pilot projects of the 1970s a new pattern of training and learning was introduced with emphasis on support for self-organised learning. With the help of new support materials the above mentioned steps were transformed into the following pattern:

- 1) Self-organised **search for information** by the trainees (*Selbständiges informieren*),
- 2) Self-organised **planning of task implementation** (*Selbständiges planen*),
- 3) **Completion** of the task (*Durchführen*),
- 4) Self-organised **control of the result and performance** (*Selbständiges kontrollieren*).

It is worthwhile to note that the *Leittext* approach was not merely promoted as a pattern for presenting support for learners. In addition, the developers of the approach provided training for teachers and trainers to produce their own *Leittext* applications by analysing relevant occupational tasks and reflecting, how to formulate instructive questions (*Leitfragen*) instead of presenting information and answers.

5.2. From simulated assignments to client-oriented tasks (*Auftragslernen*)

From the perspective of Vocational Education and Training it is essential to consider, how client-oriented working and learning tasks can be incorporated into learning

² See the document „Ausbilden mit der Leittextmethode“ produced for the Forum der Ausbilder (Foraus) of the Federal Institut for Vocational Education and Training (BIBB).

processes and how the preparation, monitoring and supervision can be organised. The experience of German pilot project has been summarised by the guidelines of the trainers' platform Foraus in the following way³:

Questions on the usability of client-oriented tasks for workplace learning:

- Is the task based on typical work processes of the occupational profile?
- Is the task by nature a frequently occurring standard task?
- Is there sufficiently time to prepare the preconditions for planning and implementing the task by trainees?
- Is the time frame for executing the tasks flexible enough for the trainees?
- Are the required quality standards at the level that the trainees can meet?

Guidelines for shaping the task in order to promote self-organised learning:

- Altogether, the working and learning tasks should promote capability to self-organised learning.
- The use of instructive material should be limited to minimum to give room for trainees' self-organised search for relevant information (for the company-specific work process).
- Make sure that the trainees have a sufficient time frame for completing the task as a self-organised work process (for information, outline of solution and eventual corrections).
- Make sure that the trainees have understood the task correctly by arranging planning meetings in which the trainees present their plans. Make sure that at final phase you organise an evaluation meeting in which the trainees present their solutions (after which you can finalise the assessment or propose a complementary task).

5.3. From instruction-oriented supervision to coaching-oriented support

The use of *Leittext* methodology and the use of client-oriented working and learning tasks are closely linked to a major change in the roles of trainers and trainees. The trainers have been challenged to give up the traditional instruction- and control-oriented role model. The new role puts an emphasis on the accompaniment of learning by means of tutoring, mentoring and coaching (*Lernbegleitung*). The Foraus guidelines for the coaching role include the following phases and measures⁴:

1. Inform yourself of the individual learning needs of your trainee(s);
2. Outline learning pathways and make agreements on learning goals with trainee(s);
3. Select learning tasks, prepare and present the tasks (and set interim checkpoints);
4. Monitor and accompany the progress of trainees (without intervening);
5. Organise a meeting for final evaluation (with focus on starting points, learning progress & conclusions) based on trainees' self-assessment and external feedback.

Key message:

The above presented three subsections outline different elements of change agendas that pave the way for problem- and project-based learning:

- **Change** from instruction- and material-driven training processes **to support for self-organised learning** (with *Leittexte* and other learning resources);
- **Change** from simulated exercises to **real client-oriented working tasks** (selected on the basis of an analysis on their adequacy for vocational curricula);
- **Change** from a teacher- and instructor-role to **coaching and accompaniment** of independent learning and working

³ See the document "Ausbilden mit Lernaufträgen" produced for the Forum der Ausbilder (Foraus) of the Federal Institut for Vocational Education and Training (BIBB).

⁴ See the document "Lernbegleitung als neue Aufgabe des Bildungspersonals" produced for the Forum der Ausbilder (Foraus) of the Federal Institut for Vocational Education and Training (BIBB).

6. From separate task-implementation to project management – *What ways for wider implementation?*

The above presented sub-sections have informed of shifts in pedagogic orientation that are essential for introducing problem- and project-based learning in vocational schools (and in workplace learning). However, a successful implementation of such approaches needs organisational formats that are embedded into the day-to-day routine of vocational schools and workplace learning.

In order to support the organisational settings for project work at schools the German Project Management association (GPM) has carried out a series of pilot projects at general and vocational schools in Bremen. During the pilot phase the planning and implementation of an integrative project was made mandatory in the advanced vocational programmes (*Fachoberschule*) in Bremen. The implementation of such projects was supported by a systematic training in project management that was provided for teachers and trainees. Now the approach is promoted at the European level by the Leonardo da Vinci project PIA (with focus on

Based on these pilot projects the GPM published a manual “*Projektmanagement Macht Schule (PMS) – Selbstorganisiertes Lernen und Arbeiten mit Plan*”⁵. This manual has been developed to provide the necessary consolidation for school projects and to facilitate the integration of project work into curricula.

The PMS manual has the following structure:

- Overview: A model of complete action (as baseline), a PM roadmap and an introductory exercise
- Preparatory work: Introduction to team-building, project log and preparatory tools
- Defining the project scope: Introduction to stakeholder analysis, goal matrix and to essential planning tools
- Detailed project planning: Structural planning, work packages, schedules, milestones, organisation and risk analysis
- Project implementation: Organisation of the teamwork, reporting on progress
- Closure of project and evaluation: presentation of results, reflection on the experience and final assessment (from the perspective of school curriculum)

Below, the Diagram 1 presents an introductory exercise with a project roadmap.

⁵ Gessler, M. & Uhlig-Schoenian, J. 2010: *Projektmanagement Macht Schule (PMS) – Selbstorganisiertes Lernen und Arbeiten mit Plan*. GPM – Deutsche Gesellschaft für Projektmanagement. Nürnberg.

Exercise

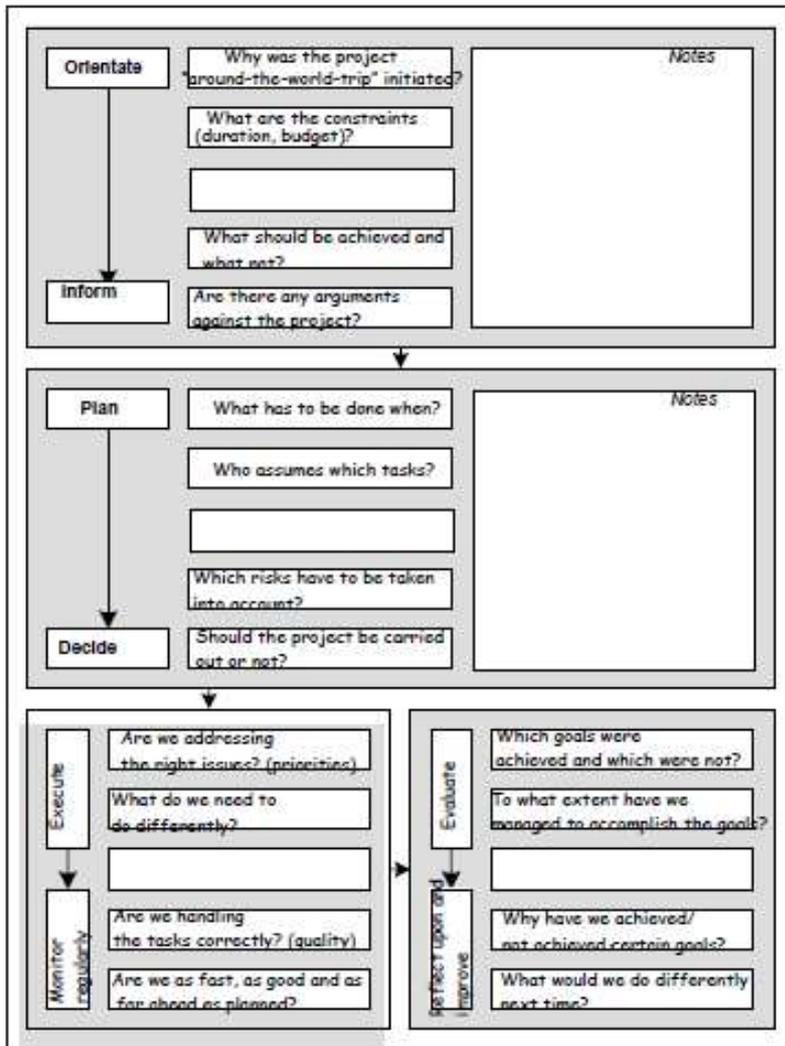


Diagram 1: Illustration of the exercise with a project roadmap

Key message: The above presented section draws attention to the necessary precondition for successful implementation of problem- and project-based learning in Vocational Education and Training:

- **Change** from disorganised use of school projects to **established project-based learning** that is **supported by training in project management**.

7. Integrated learning concepts for vocational schools & workplace learning – *How to put them in practice?*

The previous section has presented elements of change agendas that pave the way for introduction of problem- and project-based learning arrangements in vocational schools and (eventually) in workplace learning. This section focuses on curriculum reform and implementation approaches that seek to introduce integrated learning concepts for vocational schools and workplace learning. The aim of the *Lernfeld* (learning arena) approach was to introduce new curriculum architecture that puts the emphasis on project- and practice-based learning across the curricula. Below, the two first sub-sections on the reform concept and on the methodological approaches to implementation are quoted from the article of Martin Fischer and Waldemar Bauer⁶. The third section discusses the implementation of the reform approach in ordinary education and training contexts.

7.1. The *Lernfeld* (learning arena) approach as curriculum reform for developing integrated learning concepts

Since 1996, the situation has begun to change as VET policy-makers decided to implement a new curricular framework for VET schools called *Lernfelder* (KMK, 1996; 2000)⁷. *Lernfelder*⁸ are didactically reflected occupational fields which follow the international trend of competence-based and work-related curricula. This new curricular framework formed the background of a pilot project programme called 'New learning concepts within dual vocational education and training' (Deitmer et al., 2004). This programme was running from 1998 to 2003 and involved 21 pilot projects in 14 federal states. In total about 100 VET schools (with about 13 000 students who take part in school programmes for one or two days per week and take part in in-company training the rest of the week) and 20 VET research and teacher training institutes participated and developed new learning concepts such as *Lernfelder* (learning arenas).

The key purpose of learning arenas is to link curricula and ultimately learning processes to the work activity and simultaneously promote action learning at curricular level. Thus, the gap between school-based learning and in-company training, between theory teaching and practical work experience is considered in the *Lernfeld* approach. (...)

⁶ See Fischer, M., Bauer, W.: *Competing Approaches towards Work Process Orientation in German Curriculum Development. European Journal of Vocational Training*. No January-April 2007/1

⁷ In the German dual system there is one curriculum on a national level for the apprenticeship in companies and another main curriculum which is formed by the syllabi for VET schools in each federal state (Bundesland). The new *Lernfelder* framework affects as legal provision only VET schools, but not the initial in-company training. (Footnote by Fischer & Bauer)

⁸ Terminology is often a problem within a cross-national scientific dialogue. The term *Lernfeld* would be directly translated into 'learning field', but this expression does not really exist in the English language in this context. Also in Germany it is a new term. A common term like 'learning area' would not be appropriate for describing the new curricula. In Germany, this term refers to the old terminology for the discipline-oriented structure of curricula. A 'learning area', for example, would be 'foundations of electronics' or 'electrical machines'. *Lernfelder* are structured differently and they should refer to occupational fields and work processes. An example of a *Lernfeld* would be 'maintenance of a mechatronic system' or 'haircutting'. A term suggested by Pekka Kämäräinen is 'learning arena' might provide a better idea of what is meant by *Lernfeld*. The term 'learning arena' reveals that we do not speak about a given terrain but a pedagogical construction for providing a dialogue between work and learning. (Footnote by Fischer & Bauer)

This gap shall be closed by action learning within learning arenas which has to be holistic, situated, contextualised and should support practical experience. Therefore, the learning process via Lernfelder is related to a complete process of work including self-directed planning, execution and evaluation of one's own action while also being aware of interdisciplinary aspects (e.g. technology, economics, ecology, law, etc.). Regarding the curricular concepts a paradigm shift from discipline-organised curricula in VET schools towards work-process-related and competence-based curricula can be observed. In this perspective, the Lernfeld approach refers to the European debate about work process knowledge (Boreham et al., 2002). As a result, the challenge for curriculum developers and VET teachers is to identify occupational situations which are significant for the work activity and also have a potential for learning (Fischer and Rauner, 2002a).

The German policy document for the new framework sets out four criteria for constructing Lernfelder:

- learning arenas should be derived from occupational fields which represent the area of working;
- they should be related to the work and business processes which show the process character of working (and learning);
- they should be competence-based;
- the Lernfelder and its contents should be structured according to work-oriented competences. However, it is under heavy dispute whether this structure may partly follow or must not at all follow the systematic structure of a corresponding discipline (in a 'logic of subject matter')⁹.

7.2. Attempts to develop integrative learning arrangements in accordance with the *Lernfeld* (learning arena) approach

Different approaches were developed in parallel pilot projects that were evaluated by the national program monitoring units (see the final report by Deitmer et al.¹⁰).

Altogether the pilot projects of the innovation program covered a wide range of occupational areas and geographic regions and the national program monitoring units organised several evaluation and dissemination events. Yet, the results tended to be insular solutions that were difficult to transfer from the pilot contexts to day-to-day practice in 'normal' circumstances.

Although the curriculum reform concept aimed to bridge the gap between the subject-oriented school curricula (*Lehrplan*) and the occupation-oriented curricula for workplace learning (*Curriculum*), several major contradictions remained:

- Whilst the *Lernfeld* (learning arena) approach envisaged the possibility to develop integrative umbrella projects and learning designs, the implementation tended to reproduce the dividing lines between school contents and workplace training.
- Whilst the *Lernfeld* (learning arena) approach envisaged more comprehensive packaging of contents, the school practice tended to reproduce the divide into subject structures.

⁹ Structuring elements and contents of curricula is especially important for long-term vocational training as in Germany, because the basic way of learning is prescribed by the structure of the curriculum. The policy document for the implementation of learning arenas says that the contents should be structured appropriately. Unfortunately, it does not describe exactly what is meant by that. Hence, the question is, whether any criterion exists for sequencing curricular contents in the logic of work activity and competence development. (Footnote by Fischer & Bauer)

¹⁰ Deitmer, L. et al. Neue Lernkonzepte in der dualen Berufsausbildung. Bielefeld: Bertelsmann, 2004

- Whilst the *Lernfeld* (learning arena) approach envisaged a better coordination between school-based learning contents and workplace-based training activities, there were no effective mechanisms to put this into practice.

In many cases the local implementation of the new curricula led to pragmatic compromises since vocational teachers and workplace trainers were lacking the conceptual tools for implementing the reform concepts. Moreover, they didn't necessary have shared ideas how to develop integrative learning arrangements. Yet, it is worthwhile to note that in some local learning designs the idea of integrated learning concepts was developed further jointly by teachers and trainers (e.g. the "Tafelschere" project implemented by Bremen Steelworks and the partner school).

Key message:

The above presented example of the German reform illustrates the difficulties in introducing new curriculum architectures that provide the basis for integrated project- and practice-based learning arrangements:

- Difficulties in overcoming the divide between the logic of school-based learning and the culture of workplace training;
- Difficulties in linking coherent research support for pilot projects;
- Difficulties in promoting transfer from pilot contexts to day-to-day practice.

Yet, case stories from pilot projects and successor activities provide new insights into the development of project- and practice-based learning in ordinary circumstances.

8. Collaborative learning technologies for project- and practice-based learning – *What kinds of tools and aids are available?*

The above mentioned pedagogic approaches have a longer history than collaborative learning technologies. Also, the early phase in developing educational technologies or e-learning concepts was characterised by an overemphasis of the role of designs and platforms. Therefore, current discussion has shifted the emphasis to technology-enhanced learning or to collaborative learning technologies. In both cases the use of terminology stresses the role of technologies as media that support context-specific learning and the necessary collaboration.

When discussing the role of collaborative learning technologies as support for project- and practice-based learning in VET, it is necessary to make the following distinctions regarding the use of technologies (and respective tools and aids):

- Use of technologies as virtual learning environment (content management, access to learning resources, shaping workspaces for tasks). This approach suggests solutions like Moodle.
- Use of technologies as shared working environments for projects and assignments (shared spaces, web structures for presenting core documents and supporting resources, possibility to link resources to project management tools). This approach suggests solutions like KPE.
- Use of technologies as tools to access external resources, to produce user-generated contents and to get linked to parallel learning activities. This approach suggests a more open use of Web 2.0 technologies (with help of pedagogic aids).

8.1. The use of Moodle to get an overview of background developments and external resources

The use of the open source platform Moodle is a natural option since this platform is widely used for developing and presenting user-generated contents. In particular, Moodle is often used by trans-national projects for sharing knowledge on different background developments and creating common resource bases. In this respect the Moodle platform had been used by the predecessor project Euronet-PBL¹¹ to create a common toolbox for supporting practice-based learning.

For Coop-PBL in VET it seemed appropriate to use Moodle as means to present in a more elaborate way the main approaches (and their background contexts) that have been covered by this Manual. Also, the Moodle application has been used to present some complementary tools and developments. Thus, the Moodle application can be characterised as the European Resource Base of the Coop-PBL in VET project.

Below, the screenshots present the introductory section of the European Resource base of the Coop-PBL in VET and a specific section on lessons from earlier pedagogic innovations in VET.

¹¹ The Euronet-PBL project was an Erasmus multilateral project that worked in the years 2008-2010. It studied the role of practice-based learning in different study programmes in Higher Education in six countries (including the domains of economics and management, engineering studies and common toolbox can be accessed via the following URL: <http://moodle.itb.uni-bremen.de>.

"Cooperation and Problem- & Project-Based Learning in Vocational Education and Training"

- Introduction to the European resource base

Welcome to the European resource base of the EU-project "COOP-PBL in VET". We are using this Moodle application to develop a joint resource base for studying background materials and exemplary cases that highlight the following issues:

- Innovative approaches to problem-, project- and practice-based learning in initial vocational education and training (VET),
- cooperation arrangements between vocational schools and partner enterprises in different VET cultures,
- use of web resources and collaborative learning technologies to support vocational learning.

Below, the following main sections of the European resource base focus on the following topics:

2. Information on vocational education and training (VET) systems in the "Coop-PBL in VET" project

3. Insights into problem-, project-, and practice-based learning (PBL) in VET

4. Lessons from earlier pedagogic innovations in VET

Screenshot 8.1: Opening section of the European Resource Base

Lessons from earlier pedagogic innovations in VET

This section draws attention to **lessons from earlier innovative pilot projects**. The material has been collected and edited for trans-national dialogue in the EU-project "Workplace learning partnerships". This project was based as a transfer project that explored the potentials on regional partnerships between VET schools (or other training providers) and partner enterprises.

The summary report and the case stories highlight the following transitions beyond traditional teaching-learning environments:

- From situated learning to overarching umbrella projects,
- From separate training actions to regional partnerships and communities,
- From national training arrangements to collaborative trans-national training programmes.

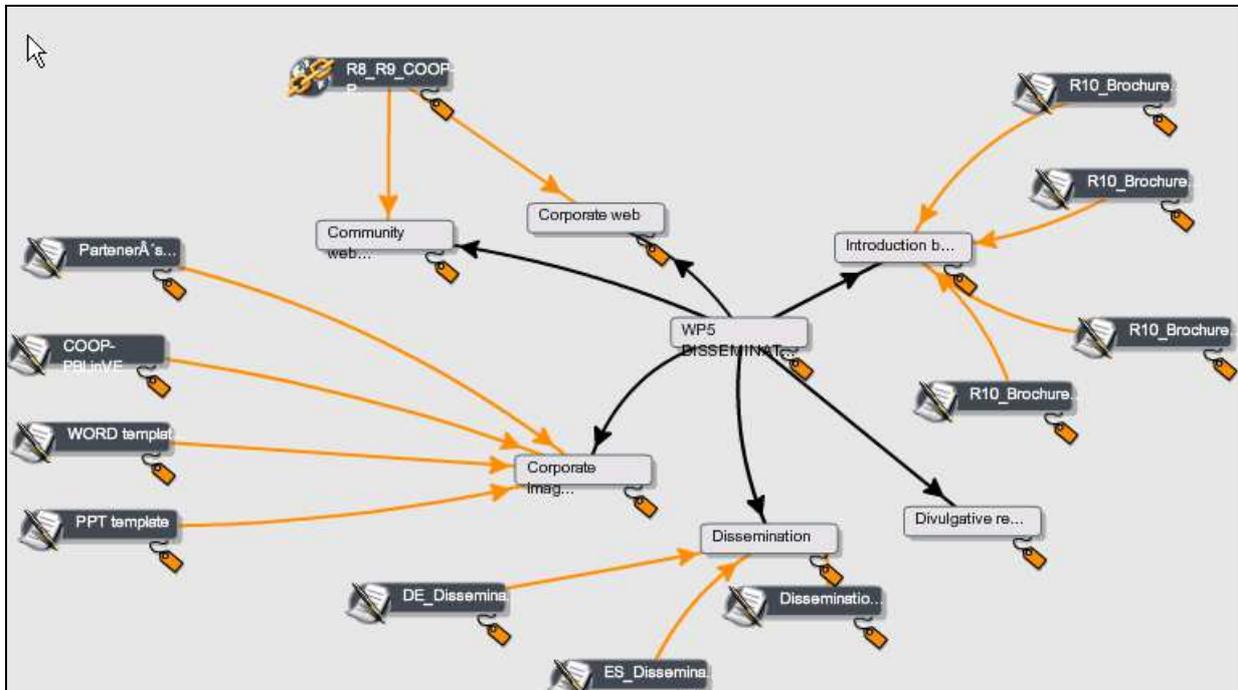
The examples are presented briefly with the attached introductory article and ppt-presentations. Further discussion is supported with commentary spaces.

-  [Workplace learning partnerships - European overview](#)
-  [Workplace learning partnerships - European overview -ppt](#)
-  [Case story \(DE\) - regional partnership](#)
-  [Case story \(IT\) - learning community](#)
-  [Case story \(FR\) - trans-national cooperation](#)

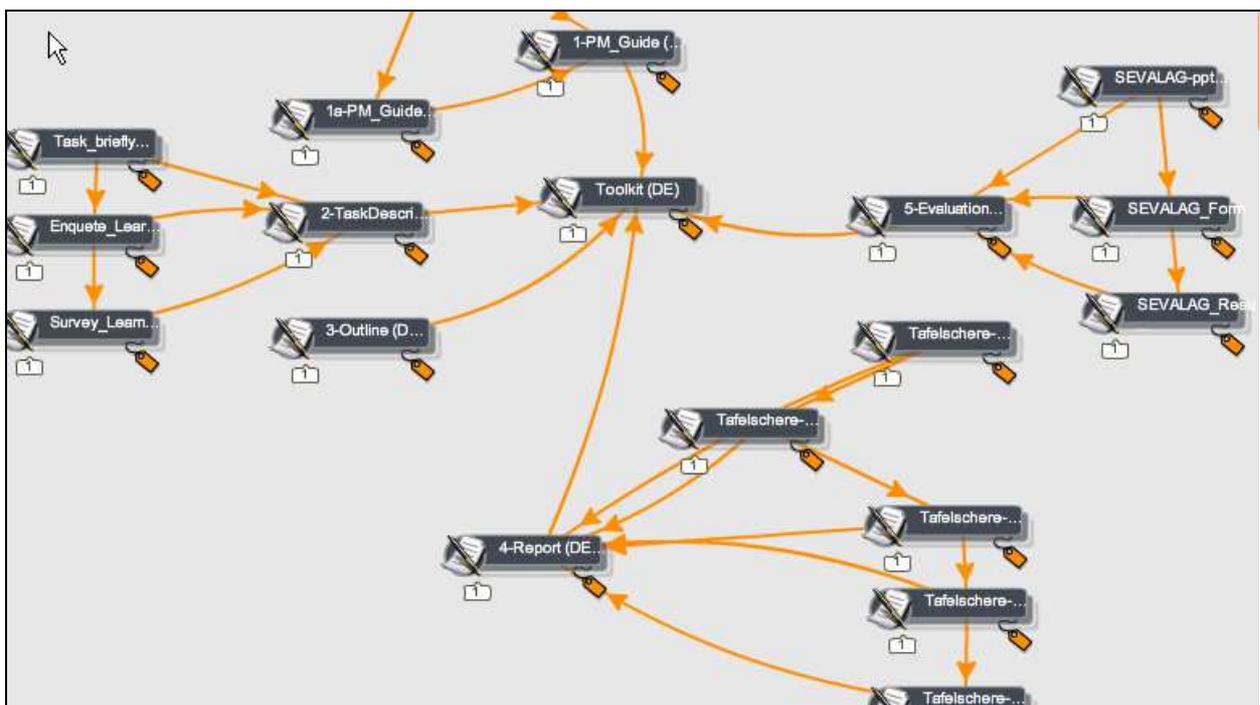
Screenshot 8.2: Section on earlier pedagogic innovations in VET

8.2. Use of the KPE shared space applications

Whilst the Moodle application was used as a peripheral resource environment, the shared spaces of the Knowledge Practice Environment (KPE) originally developed by the European research and development project KP-Lab. In the Coop-PBL in VET the shared spaces have been used as the primary working environment for the trans-national project and for the pilot activities as the screenshots below demonstrate.



Screenshot 8.3: Use of KPE shared space for trans-national activities of Coop-PBL in VET



Screenshot 8.4: Use of KPE shared space for ITB partner activities of Coop-PBL in VET

8.3. Use of the materials of the parallel project TACCLE

Prior to the Coop-PBL in VET project, the European project TACCLE has produced Teachers' Aids for Creating Content for Learning Environments (an e-learning handbook for teachers). This external resource strengthens the partner activities and supports the use of Web 2.0 tools in the field of VET. Below, the screenshots give insights into the contents of the handbook.

Introduction	
SECTION 1: GETTING STARTED	
Chapter 1:	What is e-learning?
Chapter 2:	Tools that are useful for communicating and creating e-learning content
Chapter 3:	Weblogs
Chapter 4:	Wikis
Chapter 5:	Podcasting
Chapter 6:	Video sharing web sites: YouTube
Chapter 7:	Presentation sharing software
Chapter 8:	Social bookmarking
Chapter 9:	Digital conversations/ Group audio blog/ Voicethread
Chapter 10:	RSS reader for newsfeeds
Chapter 11:	Image sharing
Chapter 12:	Taxonomies, folksonomies and metadata
SECTION 2: THE PEDAGOGY OF E-LEARNING	
Chapter 13:	Different sorts of e-learning
Chapter 14:	The role of the teacher in e-learning
Chapter 15:	Target groups
Chapter 16:	Assessment
Chapter 17:	Trends and directions in e-learning pedagogy: social software and web 2.0

Screenshot 8.5: TACCLE handbook table of contents

CHAPTER 17: TRENDS AND DIRECTIONS IN E-LEARNING PEDAGOGY: SOCIAL SOFTWARE AND WEB 2.0
LEARNING OBJECTIVES
By the end of this chapter you should be able to
<ul style="list-style-type: none">• Explain the concept of <i>web 2.0</i>• Say what <i>social software</i> is.• List some examples of social software and web 2.0 tools• Describe situations in which social software and web 2.0 may be useful for teachers• List the advantages and disadvantages of social software and web 2.0• Use social software and web 2.0 tools
In the first part of this book we introduced you to some easy-to-use software applications that we felt would enable you to 'get going' with e-learning very quickly. We deliberately omitted any theoretical, social or pedagogical explanations in the hope that if you were only to read the first chapter, you would at least be inspired to DO something rather than seeing e-learning as something to 'know' about but best left to experts.
All the applications we described belong to a particular group of software we call social software. This chapter provides a broad overview of the terms 'Social software' and 'Web 2.0', and why and how they are relevant to teaching and learning.
WEB 2.0
Web 2.0 is a term used to describe both trends in the way that people are using the World Wide Web and also changes in the technologies that simultaneously drive and reflect the changes.
The term '2.0' mimics the way developers label new versions of software. However, web 2.0 does not refer to an upgrade in the technical specification of the web, it is a metaphor used to describe how web designers and web users are moving in a new direction.

Screenshot 8.6: TACCLE handbook section on Web 2.0

Altogether, for the project Coop-PBL in VET and for the pilot activities it has been possible to outline the following strategy for using collaborative learning technologies:

- 1) The widely known **Moodle** platform has been used in the project to create peripheral resource base for presenting in a more detailed way the pedagogic approaches, examples of implementation and relevant support materials.
- 2) The KPE environment has been used to create a European workspace for presenting the work and the results of the trans-national project and national workspaces for presenting the pilot activities and initiatives.
- 3) The TACCLE handbook (Teachers' Aids for Creating Content for Learning Environments) has been presented as an external reference material for supporting use of Web 2.0 technologies in specific teaching-learning situations.

Key message:

The three approaches and the exemplary solutions reflect different choices in using technologies to support learning and working processes. It is worthwhile to note that the use of moodle serves mainly the presentation of supporting contents, whilst the KPE is used to share documents and resources in an active project context. The handbook/resource environment of the TACCLE project is an example of linking with an external resource and community to gain mutual strength.

9. Working perspectives for future development – *What lessons and conclusions for Europe of Innovation?*

The COOP-PBL in VET project has worked as a project for promoting *transfer of innovation across Europe*. Due to the project design it has had different focal points:

- Promotion of pedagogic know-how on problem-, project- and practice-based learning (PBL) in initial VET;
- Promotion of cooperation and synergy (eventually via integrated learning arrangements) between school-based vocational education and workplace-based learning in enterprises;
- Promotion of know-how on collaborative learning technologies (that support PBL and integrated learning arrangements) in VET.

In this context it is realistic to emphasise that transfer processes cannot occur as one-to-one transplantations of models from one country to another. Instead, the COOP-PBL in VET has provided the basis for learning from each other by sharing concepts, organisational know-how and software-related know how. This all has been helpful to consider the next developmental steps in different VET environments.

However, it is possible present some lessons that have been learned in the process of sharing pedagogic ideas and experiences on the implementation. In this spirit these lessons will be presented below as *key messages* and *working perspectives* for promoters of innovations in VET:

Key messages and working perspectives

a) The strength of initial VET is essentially based on the quality and credibility of vocational learning as development of competent workforce for real working life. In this respect there are common interests to be shared between diverse VET systems.

b) The underlying ideas for diverse PBL-approaches (problem-, project- and practice-based learning) have somewhat different roots but can be combined in VET-related innovation agendas. However, for innovations in VET it essential make use of these ideas in the vocational subject matter and in respective workplace learning contexts.

c) The examination of the role of PBL in reform universities has made it transparent that strong *university policies for PBL* can successfully promote the use of *problem- and project-based learning* across faculties (see the example of Aalborg University presented above). However, the examination of the role of *practice-based learning* in higher education (see www.euronet-pbl.net) shows that more work is needed to link different approaches to each other across Europe.

d) The examination of the use of *Leittext* methods showed that vocational schools can play a major role in promote self-organised learning with working and learning tasks. In a similar way the introduction of Project Management training in vocational schools can support the transition to well managed project-based learning. However, it is necessary to ensure that the partner enterprises of such schools are supporting these approaches.

e) The examination of German pilot projects with integrated learning arrangements (*Lernfelder*) shows that there are different approaches to such integration and that there are several practical obstacles that may prevent successful implementation. Yet, if the cooperation between vocational schools and enterprises is well grounded, the integrated arrangements can provide rich learning experiences.

f) The work of the COOP-PBL in VET project with collaborative learning technologies has served different purposes: 1) information on the working issues (and main sources) has been made available via the COOP-PBL in VET resource base in moodle (see <http://moodle.itb.uni-bremen.de>) ; 2) tools and working documents for pilot activities have been provided via the KPE environment, Coop PBL in VET space (see <http://mielikki.mobile.metropolia.fi/shared-space-fb4>); 3) support for promoting teachers' and trainers' web competences is provided by links to external resources (e.g. the sites of TACCLE projects <http://www.tacple.eu> and <http://tacple2.eu>). In addition the project has used the community facility and multimedia section of its own website <http://coop-pbl.com> to promote knowledge sharing between partners and other interested parties. This provides a perspective to *networked web resources*.

g) The experience of COOP-PBL in VET project has shown that the working issues of the project are more complex than a simplified interpretation of 'transfer of innovation' could suggest. Instead, the work with PBL-approaches, cooperation between vocational schools and enterprises and collaborative learning technologies has required a lot of mutual adjustment. In this respect the project has been able to create the foundations (the knowledge resources, local training arrangements and small-scale piloting). However, at the same time changes in the organisational environment and in the web technologies have posed new challenges. Therefore, the future roads forward (regarding PBL, cooperation arrangements and new learning technologies) need further stock-taking from parallel initiatives and European cooperation activities. To some extent this has been taken into account in the "Virtual Community" section of the project website <http://coop-pbl.com>.