

A Leonardo da Vinci project: Blended Learning Methods in Vocational Education Just in Time reBlending

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Abstract - Surveys and experience of daily business in EU show the need to learn languages and culture sensitive communication skills. New information technology especially mobile devices, offers possibilities to enhance the interaction between actors. To guide such learning processes a new generation of pedagogical methods, practices and learning tools are needed. Intelligent learning and automated tutoring tools are required.

Developing new pedagogical methods should always take place within a context. We chose German as a pilot content for this project. The main aim of the project is to design, create and test e-learning content, blended learning methods and mobile learning tools for vocational education. The project provides learning materials in the form of Learning Objects (LOs), which are interactive unitary pieces of the learning material. These can be used in various devices such as computers, mobile phones, PDAs and communicators (multiple platforms). Learning Objects are also open source products. Both teachers and students can develop new objects.

Index Terms – blended learning methods, German, learning objects, learning on the job, Leonardo da Vinci project, mobile devices.

BACKGROUND

Surveys and experience of daily business in the EU show the need of effective and efficient ways to learn for example languages and cultural sensitive communication skills. These needs are especially visible in companies and in vocational education including learning-on-the-job.

In the recommendation of the European Parliament and of the Council are listed 8 key competences. One of the key competences is the communication in foreign languages. The definition says that 'Essential skills for communication in foreign languages consist of the ability to understand spoken messages, to initiate, sustain and conclude conversations and to read, understand and produce texts appropriate to the individual's needs. Individuals should also be able to use aids appropriately,

and learn languages also informally as part of lifelong learning.' [1]

In the press release of CILT Isabella Moore, Director of CILT, the National Centre for Languages is referred to say: 'The need for languages in the workplace is changing rapidly as our economy becomes more international, and it is important that we highlight these changes for young people as they make their career choices. The communication needs in the workplace today, and the competition our young people will face in the jobs market are not the same as even 10 years ago and languages can be an important part of work readiness.' [2]

AIMS AND OUTCOMES OF THE PROJECT

How can students be prepared in the best possible way for the needs of their professional lives?

The main aim of this pilot Leonardo da Vinci project is to find answers to this question. New information technology, especially mobile devices, is believed to offer extra possibilities to classroom teaching to learn on-the-job and open new possibilities to enhance the interaction between actors. To guide such learning processes a new generation of pedagogical methods, practices and learning tools are needed. Intelligent learning and automated tutoring tools are required for teaching and tutoring engineers as well as students learning on-the-job.

Therefore this project develops new learning methods and a new mixture (reBlending) of teaching and learning methods suitable for mobile devices (e.g. smart phone, laptop, mp3-player). At the same time there will be developed German courses for students from companies and higher educational institutes. These courses should prepare learners of German in a specific way for the jobs they have to do and help them to solve problems connected with their job, for example when taking part in a fair, hosting guests, making phone calls (just in time). Five European countries take part in this project:

FINLAND

- German-Finnish Chamber of Commerce
- Tampere Polytechnic University of Applied Sciences (TAMK)
- Häme Polytechnic, eLearning Centre (HAMK)

- Goethe Institute Helsinki
- SWEDEN
- MKFC Folkhögskola Stockholm
 - German-Swedish Chamber of Commerce
- GERMANY: University of Reutlingen
 ESTONIA: German-Baltic Chamber of Commerce
 FRANCE: German-French Chamber of Industry and Commerce

Developing new pedagogical methods should always take place within a context. Germany is an important business player in Europe and therefore German is an excellent 'pilot content' for this project. Learners perceive the language as difficult. Learners of German do not benefit either from being surrounded by the language in every day situations, as is the case with English.

The partners in this project design create and test e-learning contents, blended learning methods and mobile learning tools for vocational education in the context of the German language and culture. In fact the goals are twofold and are developed in the same process interactively in the relation to each other:

1. to solve the problem of lacking web based learning and tutoring methods customized for the use in mobile environment by creating new learning and tutoring environment to be used in an open and flexible learning environment and culture for learning on the job. The method will be supported by the Mobile Supported Learning Environment (MSLE)

2. to develop new motivating and rewarding methods to learn German in authentic working environments (learning-on-the-job) and mobile learning tools for vocational education in the context of German language and culture.

The challenge is to combine individual and very versatile learning processes with formal and informal learning in vocational education including learning-on-the-job. The mobile learning tools, methods and the concept of the Mobile Supported Learning Environment will be usable in a wider context in any subject domain of vocational education after the project.

The project provides the target groups with new methods for blended learning, tutoring, assessment, and documentation. Moreover it provides new working methods based on the individual learners' learning process. The methods will be used in the mobile supported learning environment. The environment includes learning tools, an automatic tutoring system, templates and pedagogical methods that are easy-to-use. The very elementary idea of MSLE is that the learning environment is not limited to a virtual learning environment on a computer, but that it extends to authentic working situations. The students' concrete work tasks are facilitated and guided by mobile learning tools. These methods motivate students to learn, because they solve authentic problems just-in-time. The project also provides learning materials in the form of Learning Objects (LOs), which are interactive unitary pieces of the learning material. These

can be used in various devices such as computers, mobile phones, PDAs and communicators (multiple platforms).

Learning Objects are also open source products. Both teachers and students can develop new objects.

Structure (Work packages)

- WP1: Need analysis
Detailed specification and analysis on the needs of target groups of the project.
- WP2: Concept design
Designing the concept of the e-learning solution and practices for learning German and contextual communication in the context defined in WP 1.
- WP3: E-learning content creation & practices
Design of the e-learning process and practices and creating contents of learning objects (learning material) will be used with target groups.
- WP4: Technical implementation
Technical implementation of multiplatform (mobile) learning environment and learning objects (e-learning content).
- WP5: Piloting and evaluation
Piloting with the target groups and evaluation – during the development phase and the primary piloting phase.
- WP6: Administration
Project administration.
- WP7: Valorisation
Valorisation; dissemination and utilization.

Based on a survey in all the countries of the project partners we made a need analysis and wrote user's scenarios. On the questionnaire we got around 600 answers.

German is needed in social interaction, on the phone, during company visits, when negotiating and travelling. In this project all these situations are brought together in one overall theme: preparation of and participation in a fair. Students stated that they want to improve their reading comprehension, speaking and listening comprehension. They want to speak as much as possible, learn new vocabulary, read German texts regularly, listen to / read the news in German, practise grammar and vocabulary. They prefer to learn via face-to-face teaching connected with distant learning and use all kinds of technology. Most of the students use a mobile phone but only 50 % of them have a laptop. With mobile devices they could make exercises with immediate feed-back, exercises for listening comprehension, game-like exercises and exchange e-mails with the teacher and other students. The students would like to use a dictionary embedded in a mobile device, listen to the words of the dictionary, learn a new word daily if sent via SMS and practise the language using games.

TABLE I
EXAMPLE OF A USER SCENARIO

User's name:	Student / intermediate
Personal background	This user is a male or female person studying at a Finnish polytechnic. She/He is younger than 25 years. She/He has been learning German for about 6 years at school and finished 2 German courses at the polytechnic. She/He evaluates the German skills as intermediate but speaking as lower intermediate. She/He learns by comparing the language with other languages. She/He learns better what she/he writes down and the vocabulary by speaking the words out loud.
Professional needs	Listening comprehension and speaking are very important for this user. Important for her/him are also reading comprehension and writing. She/He needs German skills in following situations: at fairs as a visitor, in social interaction, on the phone
Learning environment	She/He can spend about 2 hours per week for learning German at weekends at home. She/He has never attended an on-line course or been studying using mobile devices before. She/He has got a mobile telephone. She/He is using this device mostly for communication but also for playing games, taking photos and looking at photos.
Expectations of the learner	She/He would like to learn new vocabulary and phrases sent to him via SMS. She/He would like to practice grammar and vocabulary und speak as much as possible. She/He prefers face-to-face teaching connected with distance learning also by using all kinds of technology. She/He would like to exchange e-mails in German with the teacher and other students. She/He would like to practice the language skills using games.

This was the basis for the development of a concept, writing learning objects, creating the platform. The user interface on a mobile device could look like this:

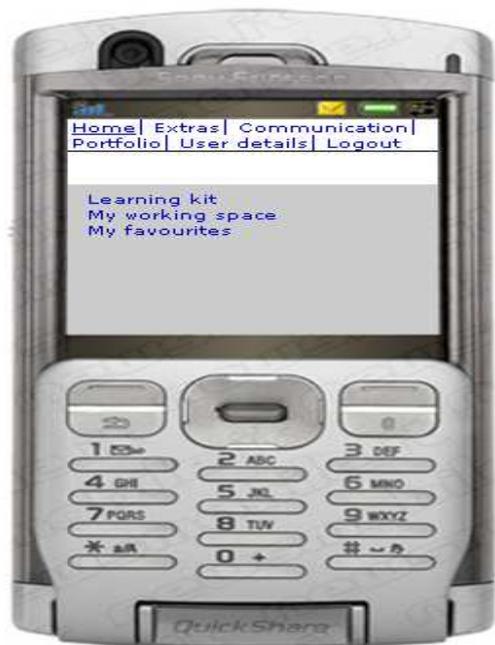


FIGURE 1
USER INTERFACE ON THE MOBILE DEVICE.

Just in Time reBlending offers two kinds of learning modes: firstly courses with face-to-face teaching combined with net and mobile devised exercises for self study; secondly web-based and mobile courses for self studies. But usually blended learning today describes an effort to put together a learning environment, where the focus lies at integrating in an appropriate manner learning processes, environments and tools of interaction offered by the information technology [3].

The web can be used e.g. as a platform to distribute tasks and communicate [4]. In the case of reBlending an intelligent tutoring system is additionally provided on the internet to take over some of the tutoring tasks and allow the learner independence regarding to the tempo-spatial limitations. Hence the virtual platform is merely a tool. In this review we use both acquisition and learning in describing the learner's/acquirer's task. It is clear that using the concept and the platform of reBlending the learner does not merely "submit to formal teaching", nor is he/she a pure acquirer in the sense of paralleling with first language development in children, but often in between (example: making photos of certain issues and collecting a topic related dictionary together in a group of students).

Examples of constructivism in reBlending: sending speech to the teacher to be checked, possible only in small groups; working with comics (drafting texts, organizing text and picture to meet); collecting word families and concept schemes, elaborating on the outcome.

On a Learning on the job -type of course learning takes place mainly at the computer and respectively as blended learning: teaching and self-study on PC. Feedback comes from the Intelligent Tutoring System on the platform, but also via contact teaching. Learning Just in Time / Learning on Demand mean that learning is driven by actual needs and that learning is happening just when one needs the information or the skills. Therefore a central factor from the viewpoint of the learner is mobility and the use of mobile tools. The learner downloads from the multiplatform knowledge (phrases, vocabulary, texts) and exercises (reading and listening comprehension, use and making of sentence structures). Feedback follows immediately from the ITS after a completed exercise, possibly from the tutor via mobile device.

The technology has to be simple operative so that a minimum of focus and recourses have to be used to the actual operation of the technology. Obviously technical support should be at hand at all times. The role of the technology mainly lies in mediating communication [5]. Computer-based applications are used to simulate language use and design assignments for the learners. But modern technique doesn't invalidate the requirement of pedagogical justification and know-how of any studying activity. Individuals learn (languages) according to certain principles, and the available technique and tools must be used according to those guidelines.

The sectors or sub-environments become one larger entity or environment within certain methods, conditions and context. In the reBlending-concept it could be described as Learning Foreign Language Proficiency in Business Cultural Context with a Self-Directive Approach

and Making Use of Web-Mediation and Mobile Tools.

Sub-environments in this context are certainly

- the platform, containing knowledge and exercises, serving as a communication channel;
- the simulated environment of a trade fair participation with inherent problems, orientation,
- organization, finding vital information, communicating;
- the learners' community.

In a broader sense perhaps even the own learning project (or process) can be seen as an own space in the larger environment.

Anyone using the reBlending-concept and platform has the larger goal of gaining enough communicative competence to enable participation in a trade fair as an exhibitor. Key areas of communication are e.g. product presentation, customer relations, asking, inviting, instructing, reserving and making an appointment.

Using the Platform

In the centre of the learning environment is the usage of a virtual platform equipped with an Intelligent Tutoring System. Any learner can study self-guided and interact with the ITS. He/she can in addition rely on the support of a tutor, if one is appointed or offers face-to-face-teaching. The learner will have defined his/her own learning goals, which are partly individual and partly pre-defined. The overall goal is to learn to use the foreign language skills needed in certain intercultural situations. The learner chooses the desired learning objects, interactive unitary pieces of the learning material, in the pool on the platform.

The learning activities/tasks include such as asking on the phone for a missing object, putting sentences together a form a logical dialogue, writing a dialogue to a comic strip, making a learning card with the vocabulary that is needed in designing a stand. All of the outcomes are saved in the personal learning portfolio, where the learner saves all the materials, exercises and pieces of information he/she wishes to have access to later. The Intelligent Tutoring System provides immediate tutoring and correction, as well as links to grammatical rules.

Authenticity of the Exercises

Exercises on the platform resemble authentic situations and activities. The concept behind authentic simulations is to design an environment, in which learners use their minds as they would if they were acting in real situations. Thus, while completing the exercises, the learner has to adapt to different roles, undertake social interactions in their roles of practitioners: teamwork, leadership, negotiation, and cooperation [6]. The whole concept of Learning On Demand is based on the idea of meaningful and purposive learning, which as one of many factors should trigger a positive motivation, thus promoting learning.

TABLE 2
THE LEARNING PROCESS FOR JUST IN TIME REBLENDING

The planning and implementation of a trade fair participation in Germany
<u>Planning for the fair participation</u> Gathering vital information Choosing the fair Application Communication Stand (construction) Logistics (hotel, travel)
<u>At the fair</u> At the arrival to the fair: - Checking orders (technical issues, catering) - Getting familiar with the fair infrastructure and key persons Acting at the fair (personnel): - Identification of visitors/customers - Selling and presentation of products
<u>Follow up</u> Feed back to visitors - phone, email, letter
<u>Portfolio to support the learning:</u> The learner gathers and chooses what he/she wants to save for further learning situations

Outcomes

- Target group e-learning analysis
- Summary of user scenarios
- Description of new teaching and learning methods and practices
- Teacher's guide to new methods
- Multiplatform learning environment
- Intelligent tutoring system
- Learning objects
- Open-source code and documentation
- Courses
- Teacher's/tutor's training
- Teacher's/trainer's guide/manual
- Best practices
- Piloting phase: report & evaluation
- Dissemination material
- Project web-pages

PERSPECTIVES

The project lasts from 1.10.2005 till 30.9.2007. I hope that by the time of the conference I can demonstrate some Learning objects on a mobile device.

The project is in its nature, hence, both a pilot and a language project. However, the innovative weight and the greatest valorisation potential of the project are with the pedagogic methods and learning as well as the tutoring tools. Due to this fact the choice was made, at this point, to classify it as a pilot project, even if it also develops language learning materials.

More information you can find on the project website
www.reblending.se

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