Chinese Language Learning with ILIAS an Open Source Learning Management System

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Abstract:

The Open Source Learning Management System ILIAS has gained widespread popularity in educational institutions across Europe. At the University of Passau it was used in a two-year project for implementing a Chinese Language Learning Course. After analysing several existing studies and testing ILIAS and similar systems, we decided to use ILIAS. Chinese is a foreign language difficult to grasp for German speakers. There are many distinct difficulties which we aim to overcome with our system. This article will describe the development process and the experiences made in using and adopting the Open Source Learning Management System ILIAS for the purpose of teaching Chinese.

Key words: Blended Learning, Open Source, Learning Management System, ILIAS, Chinese, Computer Assisted Language Learning

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1 Introduction

Globalization has led to an increased speed in the development of new technologies. At the same time, the rising number of cross-country collaborations has triggered a rapidly growing demand for foreign language skills in the labour markets. These trends offer a great many opportunities for the research field of computer assisted language learning. The University of Passau hosted a project funded by the ESF (European Social Fund) to develop a computer assisted language learning course for Chinese. The project was called “Chinese for the Workplace” and its principal aims were:

• to develop a concept for learning Chinese in higher education
• to develop the necessary media and technical platform
• to evaluate the language course

The concept suggests using various media: a book, an online tool and an audio CD. This article focuses on describing the online tool. We will describe the project “Chinese for the Workplace” and the information systems we used. We will show that open source systems are powerful and highly flexible tools for creating language courses. In this project, ILAS was used for this purpose. The didactic concept, the content and the evaluation of the course will be introduced very briefly.

In chapter 2, the project setting – especially the project aims and the project team – will be outlined. These are important factors for deciding which systems may be used in such a project. We will then discuss which impact the restrictions immanent in the learning content, i.e. the Chinese language, had on the project and the development process.

Chapter 3 describes the learning management system ILIAS and its basic architecture and functionality. We will use examples from our project to demonstrate the high potential of open source learning management systems for next-generation e-learning.

2 Project Settings and Requirements

“Chinese for the Workplace” was designed as a two-year project to develop a Chinese language course. The main project objectives were the development of a blended learning concept for teaching Chinese and its implementation in higher education at the universities in Bavaria. The course is intended to prepare outgoing students for their stay in China by embedding cultural context relevant for occupation in the course. We hope to improve both university graduates' skills and their chances in the international job market by offering them a Chinese language course aligned perfectly with their needs. Another project target is to provide all Bavarian universities with the program by offering the course via the virtual university “Virtuelle Hochschule Bayern” (VHB 2009), thus granting many university students access to Chinese language courses for the first time. It will be possible to integrate the course in university curricula and to provide tests and certification equivalent to that obtained in standard language classes.

The development of a blended learning course comprises very homogeneous tasks. A didactic concept for the Chinese lessons (presence phases) needs to be prepared. The linguistic structures need to be represented clearly, which we plan to realise by creating animations and multimedia applications.
Sound recordings and video recordings from both authentic sources and from studio productions must be planned and produced.

The typical life cycle of blended learning projects divides the project into the following phases: planning, concept and creation, pilot and quality management (Reinmann-Rothmeier 2003). These phases were used for structuring the project presented here. We will focus on describing planning the project and creating the concept. The quality management phase will be the topic of a later publication since system evaluation is still under way.

The concept comprises both didactic and technical aspects. Since both aspects had an equally strong impact on important project decisions and influenced each other, we will describe them simultaneously.

For the implementation of the online tool for the language course, it was necessary to use a learning management system (LMS). LMS include, according to Schulmeister (2003), the following five functional areas:

- presentation of contents (text, graphics, image, audio, video, etc.),
- communication (asynchronously, e.g., e-mail, synchronically, e.g., chat),
- tools to the learner's support (to create tests and exercises to work on),
- evaluation and assessment help,
- administration (administration of course participants, learning contents, dates, etc.).

### 2.1 Decision for a Learning Management System

For the implementation of the language teaching programme, we decided to use the well-known ILIAS system. This decision was reached based on an LMS analysis conducted within the project's planning phase (Lehner and Müller 2006). Various LMS studies (e.g. Baumgartner et al. 2002) identified essential decisive factors which are related to the project settings and the project aims. Suitable systems were picked out and reviewed more exactly by the project team. These candidate programmes are the following ones:

- IFIS eLearning suite
- EverLearn
- Metacoon
- Moodle
- Stud. IP
- ILIAS

All considered systems were installed experimentally and checked to determine whether they fulfilled the requirements. Evaluation results favoured ILIAS as a learning management system for the project "Chinese for the Workplace".
2.2 Specifics of Chinese

The Chinese language has specific characteristics which are important to consider when developing an e-learning program. Chinese is part of the Sino-Tibetan language family (SIL 2005). This family of languages is, after Indo-Germanic, the second most spoken language worldwide. A total of 403 different languages belong to the Sino-Tibetan family of languages (SIL 2005). In China, 236 languages are officially recognized (SIL 2005). Mandarin is a written sign language whose characters are called Hanzi. It is not possible to infer directly from the characters how they are pronounced. For the pronunciation, there is the phonetic transcription system called pinyin. It helps those who are not familiar with the signs to learn pronouncing single syllables and words as quickly as possible. Pinyin was approved in 1982 by the ISO (2006) as an international standard for the phonetic transcription of Chinese and was established in the ISO 7098:1982 for the first time. Hincha (2003a) comes to the conclusion that pinyin equals fully certified writing. For learning Chinese characters, a certain degree of knowledge in Chinese culture is helpful.

Chinese is, from the point of view of German learners, a distant foreign language. Learning distant foreign languages is likely to present more difficulties than learning an affine foreign language. Main problems regarding learning Chinese are the Chinese characters, the tonality and intercultural differences. These facts have to be considered both at the didactic level and at the technical level of the project. Some solutions and suggestions from the technical view will be shown in this article.

2.3 Project Team

“Chinese for the workplace” was carried out as an interdisciplinary research and development project in close cooperation by the Universities of Munich and Passau. The project team consisted of several expert teams to make sure that the technical and the didactic components were equally well considered in system development (e-teaching 2007). The Chair of Information Systems II of the University of Passau was responsible for technical development and general project coordination. Course content and curricular planning was executed by the language centre of the University of Passau and the Institute of Sinology at Munich LMU together with professional authors. In addition, a very well-known publishing house was involved in the project as a cooperation partner. The multidisciplinary project team consisted of Chinese native speakers and e-learning experts.

3 Learning Management System ILIAS

ILIAS is a LMS which, in its basic version, already offers numerous possibilities for the creation of learning content, and the possibility to adapt the system to one’s own specific demands. The system was chosen for multiple reasons. For all users of the software (learner, tutors, authors and administrators) there exists detailed documentation. ILIAS is a popular LMS in the educational area and is lauded frequently in studies and by educational institutions. The system is highly popular in Germany, with approximately 105 official installations at over 60 colleges. Thus mistakes as well as security gaps are fixed by the developer community nearly as fast as they are uncovered. On account of the good evaluation results and considering the additional criterion 'price / performance', ILIAS was included in a recommendation letter by the ministry concerning the use of learning platforms in the educational area in April 2003 (Kristöfl 2003, Kristöfl 2004, Kiedrowski 2004).

3.1 Basic Concept and Architecture

ILIAS is a Learning Management System based on a Client Server Architecture. Neither the hardware nor the software of the used server will be discussed in this work. They are shown
in Illustration 1 as “Server Environment”. Based on it there are modules and services. A module provides specific functionality and is independent for a determined purpose while services provide functionality not only for themselves. They offer their functions to other services or modules.

For implementing a Chinese language course, it was necessary to apply different modules and services. Some services are used implicitly because they are part of the core functionality of ILIAS. For instance the DB (Database) service is necessary for all modules. It controls all database activities. There are a lot of other permanently used core services which will be not discussed. In the following are the most important modules listed:

- Learning Module
- Forum
- Chat
- Test

These modules can present learning content independently from the provided content type. That means that the fact that learning contents are in Chinese does not play a special role for the basic learning content functionalities (shown in 3.2). Beside that, there are special functions regarding Chinese. They are shown in 3.3 and are based on the specifics of Chinese already introduced in chapter 2.2.
3.2 Basic Learning Content Functionality

3.2.1 Learning Modules

Learning modules are used to organize and present the relevant learning content of the course. They consist of packages of different subjects integrating various media sources. In “Chinese for the Workplace”, they are designed as the workload for one week beside the classroom courses. Learning modules exist for both chapters and pages. The appearance of the learning modules can be very different. In Illustration 2, the first page of a learning module with the so called “toc2win” layout is shown. That means that all content is visible in two windows. The left one is to list the table of contents and the right one is for the contents itself.

Learning Modules in ILIAS allow implementing more functions for supporting the learning process. It is possible to control access to the content or to track it. Furthermore it is possible to add metadata to Learning Modules to provide additional informations for the learner.

3.2.2 Additional Learning Content

Another intention of the course was not only to provide a stringent curriculum, but to offer opportunities for the learner to choose their topics of interest. Thus the mediation of intercultural aspects was integrated within intercultural situations into the course and was made available as additional material to the learners. Furthermore was the linking on authentic web sites and resources an important issue to support independent wide learning. Flash games, video and audio resources are beside the described learning modules available and can be used for learning Chinese. All the learning material is put in the repository as additional learning content. These parts are not directly integrated in the course curricula. The intention is to offer a wide range of exercise possibilities and further information regarding the learning content.
3.2.3 Test and Assessment

Another main part of the online environment are the integrated tests. The ILIAS test module contains various question types which can be integrated in a test:

- Multiple Choice questions
- Cloze questions
- Matching questions
- Ordering questions
- Imagemap questions
- Essay questions
- etc.

All question types can be combined with other media. That means that there are a lot more question type possibilities as the listed ones. In combination with audio or video files there is a large number of new question types. Especially for foreign language training it is very useful to combine the existing question types with media material. Exemplarily to train listening skill could it be a big gain.

In Illustration 3 is shown a Multiple Choice question from the course “Chinese for the Workplace”. It is combined with an audio file containing a recorded telephone call. The afterwards presented question regards to the content of the call. That is only an easy example for application of questions in the course.

3.3 Special Chinese Functionality

For learning Chinese there is the need to consider some special demands of this language. The following specific features of the Chinese are problem fields which have to be considered:
• Character of the Chinese language.
• Tonality of the Chinese language.
• Serious cultural differences.

3.3.1 Displaying Chinese Characters and Pinyin
Some learning concepts whose objective is to bring her target group as fast as possible to speaking skills renounce even completely characters and are using primarily the phonetic transcription pinyin. This work do not support this concept, but provides a functionality to leave the decision at the learner side. It is possible for the learners to decide between different appearances by the implementation of special functions. The functions are called “Hanzi ein/aus” and “Pinyin ein/aus”. They can switch the presentation of Chinese characters on or off. The function is available at each page of the Learning Modules in the navigation bar (see illustration 4). It was designed to meet the demand of different Chinese learner types and to give them more autonomy in their learning processes.

Illustration 4: Starting dialogue with video and text

3.3.2 Animations of Chinese Characters
The Chinese character system is very complex and a special challenge for Chinese language learners. Learning the right manner of writing and sign structure is supported by animations. They are showing the sequence of the right line directions and line orders. The representation
can image the correct order and the direction of lines clear and very well. Thereby the correct form of writing can be displayed to learners and they can practise it.

Roche and Scheller used animation in German foreign language lessons and came to the statement that dynamic images (animations) are suited substantially better to the representation of sequential or causal circumstances, but only as long as also this not to an irritant flood or distraction leads, but it can not be assumed automatically from the fact that the application of animation is supporting learning processes (Schnotz 2001; Lowe 1998; Lewalter 1997; Roche and Scheller 2004).

Movements automatically draw the attention to themselves and require for this reason special embedding. Thus the the presentation speed must be adapted to the learning purpose. The demand for control mechanisms can be very simply followed by current development technologies: Videos and animations can be paused easily, even the playback velocity can be modified. Hence, it is basically advisable, with animations.

3.3.3 Tonality of Chinese

Chinese as a tonale language distinguishes different pitches. The meaning of a word can change various intonations of the same syllables completely. Thus a with pleasure cited example is the meaning change of the word "ma". According to the used tone, the meaning changes:

- mā - mother
- má – hemp
- mă – horse
- mà – to bluster
To train and represent the tonal aspect of the Chinese language audio files together with the representation of animations are suitable (see Illustration 6). By the application of these media types a high degree of descriptiveness can be reached, and may lead to a better understanding for the learners.

3.3.4 Intercultural Differences

Audio and video are meanwhile a main component of modern e-learning applications. Petko and Reusser assign above all descriptiveness and practical relevance to the video-application and explain text-heavy e-learning solutions as inexpedient for the appropriation of practical competencies. While the value of the often text-based e-learning for rather 'theoretical' connections is indisputable, a widespread scepticism rules compared with a widely Internet-based learning in the context of the appropriation from practical action competence (Petko and Reusser 2005). A transfer to the field of foreign language lesson is possible, because interaction competence is also of great importance. Especially in the subject areas intercultural understanding and intercultural competence video applications are suitable on account of the descriptiveness particularly to provide knowledge and abilities.

To overcome the cultural distance between two cultures by multimedia technologies would be fanciful. Nevertheless, an assistance and relief to the approach of both cultures by multimedia is conceivable and is pursued thus as an aim also in the created course. The methodical estimate to the education of the intercultural competence encloses the following levels (Klippel et al. 2007):

- It are offered customary instruction units, like learning tips and practise assignments, supplemental by clickable pop up to menus with information about interculturally important circumstances.

- The conceived intercultural learning module prepares the students for a stay abroad in China. It concerns a real person, a student of the University of Passau who appears during the course at different places in videos and reveals experiences from his own stay abroad in China.
Transparent videos have been integrated in the learning modules. They were produced with green screen technology and put directly in context to the course curricula. In illustration 7 is shown a playing video above the regular course content. The intention was to add a student opinion to the currently discussed learning content of the course. The shown student divulges own experiences to the learners and talks directly to them. This module is integrated irregularly depending from the actual treated topics of the course.

4 Summary

Our experiences during the project work and while using the developed program “Chinese for the Workplace” at the University of Passau prove that open source software can provide the basis for successful language learning courses. It is necessary, however, to choose a suitable learning management system. The decision needs to be well-informed, and it must take into account the project setting and its surroundings. There is not one LMS for all purposes and all projects. The functionality of a LMS must be examined carefully to decide whether it is suitable for the intended purpose.

Open source systems are frequently a feasible alternative for expensive software, especially if project funding is low-level, since open source systems incur no licensing costs. The code is freely available and in most cases well documented which allows the user to easily alter or expand it. If the functions needed for a project have not been implemented yet, however, project resources must be dedicated to developing them. Depending on individual project conditions, e.g. the level of software engineering expertise within the project team, software development may be outsourced to an IT company.

Language learning courses need to be structured individually because there is a broad variety of language course aims. The Chinese language, for example, has specific characteristics which needed to be taken into account when implementing the Learning Management System. Various functions had to be designed specially to meet the demands of this language. The learning management system ILIAS was flexible enough to allow us to create a Chinese language course that includes these custom-built functions. The standard functionality offered by the system allowed us to concentrate on developing new functionality and made it easy to
implement our new solutions. The project team's level of expertise in software engineering was high enough to develop suitable functions for Chinese language learning.

This article outlined the development of an online tool for the language course “Chinese for the Workplace”, focusing on describing the design and implementation of functions for overcoming learning difficulties with Chinese characters, the tonality and intercultural skills. The solution presented here is intended to support and improve critical points in the process of learning Chinese. Preparations for evaluating the impact of our solution on the learning process and its effect on students are currently under way, and results will follow soon.
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