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THE VIRTUAL TRAINING CENTER: A SUPPORT TOOL FOR TEACHERS COMMUNITY

GABRIELLA DODERO¹, DESISLAVA RATCHEVA²,
ELIZA STEFANOVA², MALGORZATA MIRANOWICZ³,
CRISTINA VERTAN⁴, VILMA MUSANKOVIENE⁵

¹ Faculty of Computer Science, Free University of Bozen-Bolzano,
Piazza Domenicani 3, 39100 Bolzano, Italy
e-mail: gabriella.dodero@unibz.it

² Faculty of Mathematics and Informatics, University of Sofia,
5 James Bourcher, 1164 Sofia, Bulgaria
e-mail: dasenova@fmi.uni-sofia.bg, eliza@fmi.uni-sofia.bg

³ Department of Chemical Education, Adam Mickiewicz University,
Grunwaldzka 6, 60-780 Poznan, Poland
e-mail: groch@amu.edu.pl

⁴ Department of Computer Science, University of Hamburg,
Vogt-Koelln-Str. 30, Hamburg D 22527, Germany
e-mail: vertan@informatik.uni-hamburg.de

⁵ Distance Education Centre, Kaunas University of Technology,
Studentu str. 48A, 51367 Kaunas, Lithuania
e-mail: vilma.kovertaite@internet.ktu.lt

Communities of practice for teachers are emerging, where the issues of life long learning of in-service teacher is supported by a collective effort and by applying modern methodologies and tools. The paper describes how effective support to teachers communities is achieved by means of a Virtual Training Center, that is the virtual meeting place of the community, which was built during the I*Teach pilot project. Teachers who have similar goals, but few opportunities to physically meet each other and with other project participants, may share information and discussions about the development phases that precede and follow the actual application of the proposed methodologies and tools within their classrooms.

Keywords: Community of practice, Virtual teacher community, Virtual training center, Teachers' training

1 INTRODUCTION

I*Teach (Innovative Teacher) is a pilot project within the frames of the Leonardo Programme (Leonardo, 2005) funded by the European Union. The "Innovative" attribute for teachers stands for improving the pupils' soft skills by means of ICT based tools while teaching their own subjects. Such tools are a key part in the design and development of classroom activities based on active learning methodologies (Stefanova et al, 2007).

The I*Teach project (I-Teach, 2005) started in October 2005 and will terminate in September 2007; it has involved seven EU countries, and has been coordinated by Bulgaria's University of Sofia. During the past months, a methodology handbook has been prepared, aimed to be used as a part of teacher training courses. Most teachers involved in such courses are now applying the proposed methodology in their classrooms, and are available to share their experiences with colleagues.

One of the main goals of the I*Teach Project is to develop technological support for communication inside the teacher community. Two kinds of communication platforms are currently implemented:

1. A Repository of scenarios (proposed activities in the class) which may be decomposed into smaller units (tasks). The tasks and scenarios are structured according to the I*Teach methodology. Search functions provided within the repository allow teachers to look for possible activities, adapt them to local context, translate them into another language, and attach comments about their actual experiences. The Repository is multilingual and offers an on-line and an off-line toolset for uploading developed activities.
2. Virtual Training Centers in each partner country, which will represent the meeting place of the community of practice built around the use of a common methodology and tools. Teachers who have few opportunities to meet physically can share information and discussions about the development phases that precede and follow the actual application of a selected activity within their classrooms.

The paper concentrates on Virtual Training Centers development and implementation. It describes the user requirements for such a Virtual Training Center from the teachers point of view. The creation of a virtual community for teachers is especially welcome by them in several participating countries, and the possibility for fast, informal interactions as provided by forums is quite appreciated. The paper discusses also the way how requirements for a virtual community of teachers may naturally translate into features provided by a web portal especially conceived for supporting e-learning activities, Moodle.

Moodle (Moodle, 2007) is an open source environment which already supports all national languages of project participants (and many more). The actual implementation at each installation may vary due to national options, and portal contents, visibility policy and interaction functionalities are implemented by such system as custom installation features, in order to better match actual needs of the users' community.

National Virtual Training Centers have been established at first in Italy, Bulgaria, Germany, Poland and Lithuania, and soon after in Romania and in The Netherlands. In the following we shall comment on the common functionalities and on the different customization options that the various Virtual Training Centers have been selecting. The paper concludes with a preliminary evaluation emerging from first user experiences with such

Virtual Training Centers, and discusses the sustainability that the latter may achieve after the project end.

2 VIRTUAL TEACHER COMMUNITIES

The new communication technologies provide means and opportunities for collaboration among professionals that share a common interest in improving their working methodologies, and teachers are just one of the emerging professions which share such interests and needs (Ratcheva et al, 2006, pp. 297-305). Such communities are built around people who share a common purpose, and exploit a computer based environment in order to achieve communication.

To this purpose, several opportunities can be offered of today's technology, and since a pilot project like I*Teach has the ambition of achieving teacher collaboration in employing new technologies in the classroom, and has transnational ambitions and aims added to that, a suitable mix of technologies has to be employed, in order to achieve such a collaboration.

2.1 Who are the users?

Each technology has to satisfy the needs of the users, but inside the I*Teach project, what are potential user groups?

- First of all, there is an international community of scientists, who share the common experience of training in-service and pre-service teachers in scientific subjects, each one within the country of origin.
- Then, there is an international group of teachers who have been involved in the first pilot experience, where the proposed methodology was applied in presence, and tested it for possible application in the respective classrooms.
- Then, in each country there is further a group of teachers who have attended training courses on such methodology, and who wish to apply such methodology in their classrooms. They know that in other countries there are similar groups of teachers who are undertaking similar experiences; and they know also that it may be possible to search a repository of training activities, suggested by their colleagues. They are also willing to share with other teachers their experiences, by uploading in the repository their own experiences as well.

The Virtual Teacher Community focuses on the third group of “participants” in I*Teach efforts, that is the high school teachers who wish to exploit technologies in order to develop soft skills within their pupils. A relatively small group of teachers has actually attended I*Teach courses (which took place in each of the involved countries during Winter 2006/07), and each of them must find sufficient support in his/her daily activities within the national group of project participants, after course completion, whenever he/she is trying to apply some “new” ideas in the classroom.

The possibility of extending the group of “innovative teachers” within each country should not be forgotten, that is, it would be most welcome to be able to support other teachers wishing to join the community and improve both their own and their pupils' skills.

2.2 What should users do?

What do teachers expect from participating in a virtual community of practice? There are advantages to be expected in participating in a virtual community, which we summarize in the following.

- Support on demand, that is daily tasks of participants may take advantage of advice from other community members
 - Improved learning, since it stimulates to include new ideas into previous mental models, and to exchange ideas with peers, or with experts (McDermott, 1998).
 - Deeper understanding, since a group of people may create a more complete understanding than a single person working on his/her own (LearnScope, 2004).
 - Time saved, which may be spent by focusing more on individual student activities
 - Learning beyond the content (Spiegel, 1999), that is members of the community may see how the content is applied in a wide variety of situations.
- Disadvantages of a virtual community may be:

- technology obstacles
- intellectual rights protection over training materials
- selfish behaviour (many more people take experience rather than share experience (Spiegel, 1999).

The influence of moderation policy on the third may however be significant in order to encourage passive participants to take a more active role. This consideration introduces a crucial aspect in the Virtual Teachers Community, i.e. the “social model” behind it.

2.3 What social model lies behind our community?

In our opinion, three different kinds of roles may be highlighted within a virtual community, where some participant may alternate among more than one role.

- At *Conceptual layer*, there are people involved in teacher training and education activities, typically belonging to higher education institutions. They are driving the development of the virtual community, guiding and supporting teachers to be trained, and those wishing to apply the methodology in classrooms. They may also coordinate training activities and take administrative roles in the supporting technologies (moderators, webmasters, etc.)
- At *Continuous development layer*, there are active teachers, who develop and share supporting materials for their classrooms, and when needed, asking for guidance people operating at conceptual level. They also apply both their own and other teacher's training activities in classrooms.
- At *Dissemination layer*, there are all teachers who may wish to apply existing materials within their classes, so that to improve their pupils' soft skills, and may wish to comment about existing materials. They should be encouraged to take a more active role and to take part in continuous development of the community.

Figure 1 shows the social model provided by our Virtual Teachers Community.

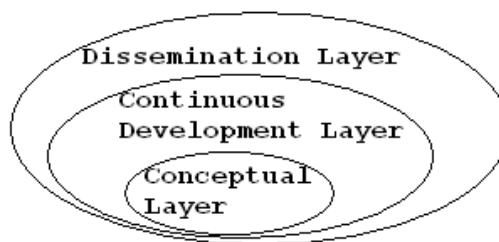


FIGURE 1. Social roles in the virtual techings community (Ratcheva et al, 2006)

3 THE VIRTUAL TRAINING CENTER

To support our Virtual Teachers Community, suitable collaborative software has been provided, taking the form of a Virtual Training Center. According to a taxonomy presented in (Shneiderman, 2005, pp. 410-416), collaborative environments may support synchronous or asynchronous interactions, and may support collaboration at a single location, or at distributed locations.

Examples of synchronous interactions are offered by chatrooms and teleconferencing, while asynchronous interaction is often achieved by mailing lists. Wikis, blogs, bulletin boards and websites represent an Internet based approach to asynchronous communication, which gain increasing popularity as long as individual connecting time increases.

Supporting technologies for single location meetings range from classrooms and meeting rooms equipped with projecting facilities, to wall displays and laboratories where each participant may employ an individual workstation. Distributed collaborative work may take place on the web, with the aid of centralized servers, or with peer-to-peer connections and software.

So, today when virtual communities of teachers wish to achieve a common collaborative goal, there is a wide variety of possibilities, and there is seldom just one technology which definitely overcomes all the others. Budget and equipment may still be a constraint, for what concerns personal expenditures which teachers must afford in order to improve their vocational training, especially if there is no institutional support for this activity.

But perhaps the most significant concern is still about the effectiveness of a virtual community to develop a successful interaction pattern, to achieve a common goal, without in presence meetings. For the latter reason, organizing a physical space where the community may meet has to be taken into account, and it has actually happened when the I*Teach methodological courses have been given to teachers. More meetings in presence are actually scheduled before the project end, to encourage the feeling for membership as well as for solving common problems together.

Considering that in presence interactions may actually take place only at few occasions, the use of suitable collaborative software has to be of greatest importance. From the above taxonomy, it follows that most of the interactions within the community shall be of the asynchronous and distributed type, which in principle may need only a mailing list facility (and a responsive moderator or group of moderators). The *mailing list* is a cheap and effective means for collaborative work, but in our opinion it may suffer of some serious drawbacks:

- a technical disadvantage, that is the presence of quite a lot of spam which may cause filters to discard e-mail messages being sent to multiple addresses
- a personal disadvantage, that is the amount of time to be spent by the moderator in manually filtering messages, answering to individual questions etc. (moderators should be experienced people, and their time is usually scarce and precious!)
- a social disadvantage, in that the mailing list will reach only those who really wish to subscribe and take an active role, making it impossible to reach new teachers and to involve them in the dissemination layer.

After such considerations, the mailing list was considered a too primitive tool to be used with the teachers community, and its use was limited to internal communication within I*Teach participants. For supporting the Virtual Teachers Community and for establishing a “true” Virtual Training Center, we preferred to use a more advanced environment, containing several facilities of the asynchronous and distributed type, such as those mentioned above, and which has gained so far a wide popularity in the e-learning community, that is Moodle.

Moodle is an open source environment which supports already all national languages of project participants, plus English and many more; its developers’ community is quite wide and active, so that regular updates are delivered and the number of useful functionalities is expected to grow. Many participants in I*Teach already had experience in installation and use of such a tool for daily educational activities; and besides many Universities, there is also a growing number of high schools which provide a Moodle installation for internal use by teachers and students. In any case, the installation and operation of a Moodle instance appears a straightforward task, and it does not represent a big technical issue.

Moodle provides also the Virtual Teachers Community with a set of useful features, which include:

- a list of involved individuals and roles, containing real names, profiles, and photos (or nicknames and avatars, if preferred)
- a calendar for deadlines related to I*Teach project activities (such as meetings or course lectures)
- a bulletin board facility (which subsumes the role of a mailing list, since participants are automatically receiving all posts and replies as emails, with the advantage that such posts are threaded and always online)
- the possibility to provide materials to participants (e.g. The methodological handbook developed within the I*Teach project) and links to useful web resources.

Moodle models the social roles of the Virtual Teachers Community with corresponding user roles:

- the site administrators and the course creators are I*Teach project participants, working in higher education institutes, who take charge of the Conceptual layer;
- the teachers involved in I*Teach courses, who work at the Continuous development layer, are mapped into Moodle Course participants, who have a login/password and may post to bulletin board;
- other teachers who do not participate actively in the project may still view (most of) the contents, logging as Guests, but may not view participants' profiles nor add posts to forums: they represent the Dissemination layer.

The definition of what precisely should be contained inside a Virtual Training Center, in order to provide a good support to a Virtual Teachers Community is still an open question; actually, we believe that it should mostly depend on the *particular community* being supported.

We shall present in the following a set of suggestions and guidelines, which all national Moodle creators have taken into account, and then we will show examples of actual implementations, pointing out the differences between national Virtual Training Centers, that is the Bulgarian, the Italian, the German, the Polish and the Lithuanian one.

3.1 Common aspects of the National Virtual Training Centers

National Virtual Training Centers should contain materials which are *fully written in the national language*, as opposed to project website, which is mostly in English: in fact, we do not assume that teachers be fluent in any language other than their own.

This choice obliges to translate relevant materials into national languages, from promotional materials to the methodological handbook, as well as interfaces to project tools. Quite often, we experienced that translation is not enough, and that a localization effort has to complement it, that is contents or presentation must be somehow adapted to the national community expertise and current interests.

At the same time, a “*useful links*” section is provided, which lists other project related resources, including the other national Virtual Training Centers. This may seem of limited use, since very few Italian teachers can be expected to take part in the Polish teachers community and vice versa, but it was felt important in order to give a better sense of “European teachers community”- which is well beyond present project goals, but which some teacher has already mentioned as a rewarding effort, which may be worthwhile in the future.

Other project related tools have an interface which is translated into national languages, that is the *web based repository* (which will provide a search facility for materials written in national languages, as well as advanced search, by subject or by pupils age) and the *tool for creating new training materials while offline*. The latter is downloadable from the national Virtual Training Center, the former is just linked (each link points to a national web page). Manuals for interacting with such tools are included as well.

Since teacher training courses for the I*Teach methodology have already been held, the *relevant materials developed for such courses* are stored there, including slides, curriculum, a forum for participants and if requested, another one for course instructors (Moodle allows the creation and management of courses and course-related forums at the free choice of the course administrators: a facility which is most welcome by e-learning

communities).

Finally, since after all any Moodle installation is “just a website”, *all technical, scientific, illustrative and promotional materials about the project are stored there*, to be used as a reference among participants in the community, but also to attract the Internet surfers, who happen to be teachers and who may share the same interest, in joining the Virtual Teachers Community. To this purpose, the URL of such an installation should be posted into other existing teacher related resources, e.g. belonging to Ministry of Education, University, etc.

3.2 The Bulgarian installation

The Bulgarian installation is inserted within the University of Sofia main e-learning website, <http://e-learning.fmi.uni-sofia.bg/moodle>, which is also used to host e-learning activities for pre-service teachers. It is also linked and made available to in-service teachers, who often connect to <http://edusoft.fmi.uni-sofia.bg>.

One course about I*Teach methodology was given during January 2007, and all the relevant material was inserted, as customarily for Moodle courses. Since guests can login, any teacher may refer to it and browse among materials. Initially there was no selected group of people who should take the role of the Continuous development layer, teacher shall be included with such a role as soon as they start cooperating.

Figure 2 illustrates the home page for such course.

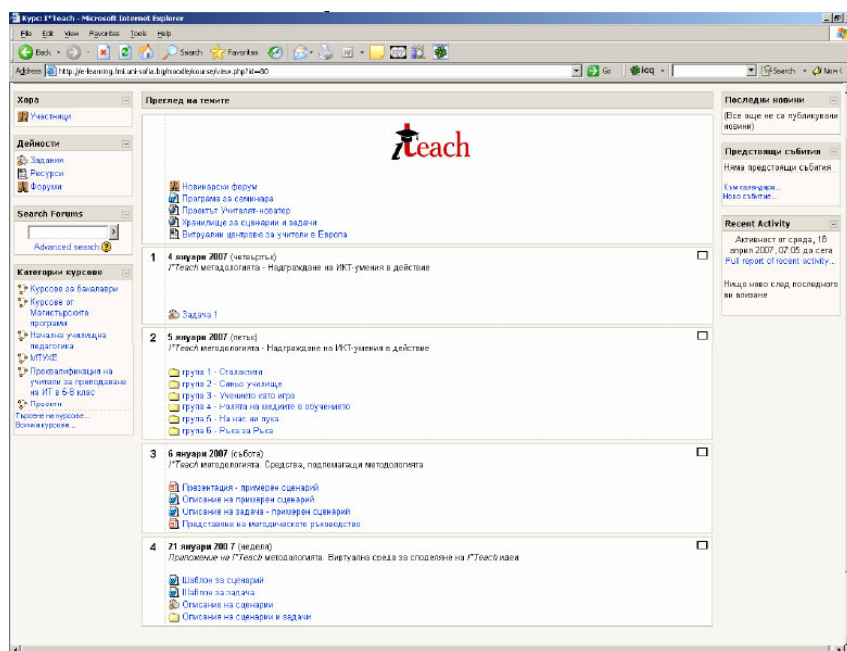


FIGURE 2. Home page of the Bulgarian virtual training center

3.3 The Polish installation

The Virtual Training Center in Poland was installed at the Faculty of Chemical Education in Poznań. It consists of information which is structured into four courses, all of them inserted at URL <http://zdch.amu.edu.pl/moodle/> as ordinary Moodle courses.

Course 1 is called *I*Teach about a project* and contains basic information on the project as well as preliminary information on the courses held in Poland.

Course 2 *I*Teach workshop in Poznań* and Course 3 *I*Teach workshop in Sanok* concern Teacher Workshops carried out in Sanok and Poznań. The courses were divided into thematic modules. They present the materials which are of use during the workshops as well as the instructions on the application of selected tools, the excerpts from the I*Teach manual and templates of scenarios and tasks. In addition to this, the participants are free to use the discussion forum, the news forum and chat which allow teachers to contact trainers as well as each other. The trainers were available in chat rooms at agreed time in order to provide advice for all that might need it. A presentation on the project itself, with its aims and expected results was also available. Within courses 2 *I*Teach workshop in Poznań* and 3 *I*Teach workshop in Sanok*, teachers submitted the training material they prepared during the meetings as regular "Moodle activities". A photographic documentation of the course was also made available.

Course 4 *I*Teach Pedagogical Research* pertains to pedagogical research. Profiles of people who have already done research at schools are presented here, together with scenarios which they have used, and products they managed to create in their classes. The participants are also provided with a student questionnaire. Moreover, they can also write their posts regarding their research and share their experience in the news forum. In this course the Polish team is also preparing a folder entitled "We spoke about our project...." where all materials from Polish conferences where I*Teach was discussed will be collected.

Figure 3 shows the home page of Course 2 and the discussion forum for such course.

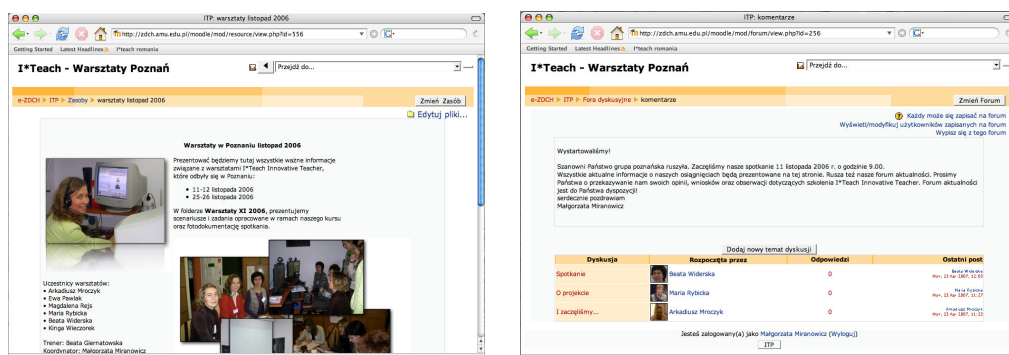


FIGURE 3. Two screenshots of the Polish installation

3.4 The Italian installation

The Italian Virtual Training Center resides as a separate installation with respect to e-learning materials for ordinary University courses, but it is as well managed by the University

of Genova central computing facility. It can be accessed at the URL <http://i-teach.unige.it> and it contains all the relevant material produced by the Italian group of participants, both for the Italian teacher training sessions, and as supplementary project documentation, including those presented at the national teachers conferences and an A1-size poster.

All such materials are organized as one course, with Course participants being the teachers who have taken part in such a course, and Italian I*Teach team as course creators. We remark that I*Teach in Italy is managed by CARED, the Center for Education Research at the University of Genova, directed by prof. G. Luzzatto, and involves also IMATI-CNR researchers (P. Forcheri and her group) and G. Doderò, who worked for the Department of Computer Science, University of Genova for the first project year, and then moved to FUB, but continued following the project. The distributed nature of the Italian team itself took an advantage of the support provided by such a collaborative tool.

Guests may log in, browse and download materials, but for the sake of privacy they are not allowed to browse participants' profiles and to post on the forum.

Figure 4 shows the address bar opened by Mozilla, with project logo appearing in the URL.



FIGURE 4. The address bar of the Italian installation, with project logo

3.5 The German installation

For the German Virtual Training Center a Moodle-Instance version 1.6.1. is used. The installation was done on a LINUX cluster, which offers the advantage of faster computations for time consuming processes. The layout of the German Virtual Training Center is similar to the Italian one. As design it was used the „standardgreen“ from the Moodle Core Package.

The content of the German installation spreads over the following items:

- general information about the I*Teach Project, aims, achievements and goals;

- a forum which allows community members to formulate questions about I*Teach project of other planned activities;
- links to the Virtual Training Centers established in other partner countries as well as to the I*Teach project web site and to the on-line repository;
- information about past and planned training activities with teachers
- a prototype for a course, designed during the first training session. The course addresses the topic Dialogue Systems. Different parts of the course are built as scenarios with the corresponding tasks.

In Figure 5 we present the organisation of the course above, as it was implemented in the German Virtual Training Center.

3.6 The Lithuanian installation

The Lithuanian Virtual Training Centre was installed on the server of Distance Education Centre at Kaunas University of Technology. VTC is linked with Moodle, where other e-learning courses are stored. Teachers have a free access to additional resources related with ICT use in the schools, other websites in Lithuania. Registered users can access not only I*Teach Methodology Handbook, but other e-learning courses, developed for Teachers training at the Kaunas University of Technology: ECDL courses, Analysis of Teacher's Professional Activities, Educational Process Organization Methods and Evaluation, and others. Also, teachers have an access to the Repository of scenarios and tasks.

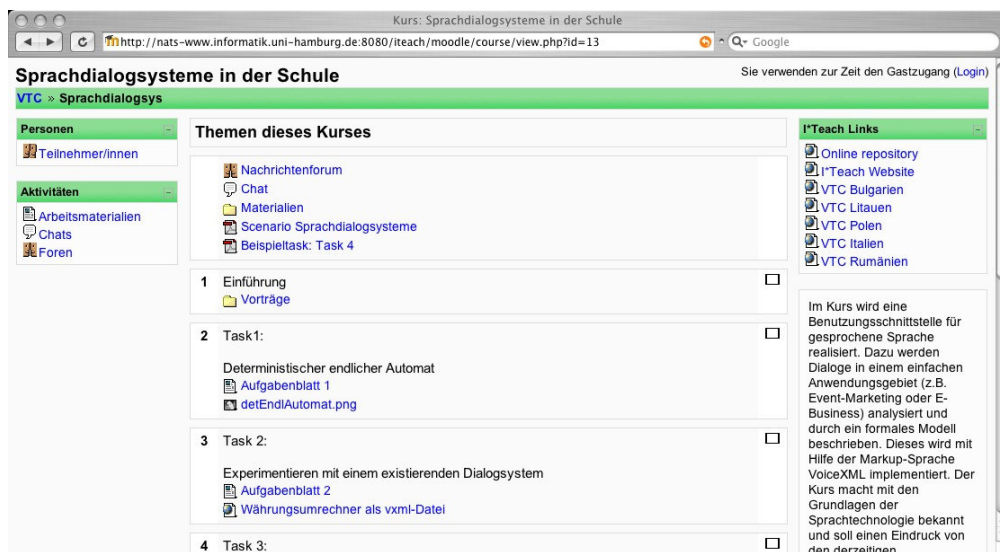


FIGURE 5. The example course in the German installation



FIGURE 6. The course in the Lithuanian installation

4 CONCLUSIONS

We have presented how a community of practice for teachers, who wish to improve their teaching and be “innovative”, may be supported within the I*Teach project. Training courses were held for pre-service and in-service teachers, and materials developed during the project have been collected in a Virtual Training Center for helping teacher in applying the proposed methodology.

National communities are centered around similar installations, yet each installation takes advantage of local resources, and supplies what is most relevant for local users. The possibility of relying on a well-known and widely used open source tool, Moodle, makes it possible to run such Virtual Training Centers without incurring in licensing expenses, so that the communities built around such websites will be supported after project conclusion. Actually several partners in the project already have Moodle installations to support local e-learning services, but the possibility of including I*Teach materials as one course among the others, or as a separate instance, has been decided independently by each partner, and such choice depends on what is felt most relevant in the local environment.

Teachers being trained are already applying the relevant methodology inside their classes, and materials produced by them and by pupils are being submitted, sometimes as Moodle “homeworks” or “activities”, or by emails.

Project participants are examining such materials, and when finalized, they shall be collected all together as one centralized repository, to be browsed through various interfaces in national languages.

One might argue whether it would have been possible (and perhaps better) to provide

just one hosting facility for the Virtual Training Centers, by translating relevant contents and interfaces once and for all. Reasons for not following such an approach are:

- Technical: Moodle may be easily installed and customized for one language, but multi-language installations are much harder to install and run.
- Educational: each partner may evolve the national Virtual Training Center independently from the others, running new courses or starting local discussion threads on topics like active learning methodologies as applied in practice.
- Economical: each partner is the only responsible for the national installation, which may start on a small server, and later on may migrate on a larger installation, when and if the community requires more support and resources. In such a case, a small financial contribution may be requested (to individual teachers, or better, to possible sponsors, like ministries, vocational training agencies and so on). Managing such funding policy as a centralized European facility would clearly be much harder.

Besides, the relative diffusion of Moodle as e-learning platform among project participants, and among all Europe, makes it quite convenient for its ease of operation and support.

The next months will be conclusive for the project, and the size and activity of the national community of practice which will be present in the Virtual Training Center is a good indicator of the expected success of the investments and efforts. Technically speaking, Moodle is already a winning choice, but communities are much more than just software, and only efforts from good moderators involved in the I*Teach teams will make the difference.

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