

PRONETT: SUPPORTING THE INTEGRATION OF ICT IN TEACHER EDUCATION

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ABSTRACT

This paper reports on the EU-project 'Professionals Networking Education and Teacher Training' (Pronett) The key objective of the PRONETT project (2001-2004) is to develop a regional and cross national learning community of pre- and in-service teachers and teacher educators supported by webbased resources and tools to collaborate and to construct shared understandings of teaching and learning in a networked classroom.

The design principles of the PRONETT portal at www.pronett.org will be described. This web portal is being developed to offer a virtual infrastructure for the participating students and teachers to support the (co)production, execution and evaluation of practice based ICT-rich teaching and learning.

The implementation efforts of the initial project partners in 4 EU countries will be reported, highlighting the co-ordinating partner's implementation activities targeted at contributing to the local realisation of ICT-rich, competence based Teacher Education Provision as benchmarked by the national representative board of Dutch Teacher Training providers, ADEF.

We will report the evaluation of the pilots carried out during the first 2 years of implementation that was aimed at validating the original portal design and collecting information leading to formative improvements and implementation procedures.

We conclude by summarizing the lessons learned and provide recommendations for improved and extended use and further dissemination of the project facilities.

1. INTRODUCTION

The initiative for the project 'Professionals Networking Education and Teacher Training' (PRONETT) was taken by the Utrecht University of professional Education responsible for the regional initial teacher training and development for vocational and secondary education. For a better understanding of the motives for the project a closer look at the context in time and place may be called for.

The project definition was influenced by the changes in Teacher Education Provision in the Netherlands (Willems et al. 2000 p. 49-60). As in other countries, e.g. UK, claims for change and quality improvement were voiced by political movements and governmental bodies (Furlong et al. 2000). In the Netherlands a strong awareness of the need for change in the professional community itself also contributed to the realisation of the Dutch Educational Partnership Project (EPS 2000-2002). The main targets of this state funded, national project, involving seven Teacher Training-providers, was to innovate teacher education so that teachers with qualifications required by the changes taking place in (Dutch) schools and society (Willems et al. 2000 p. 35-48) could be trained. Among these the competence to apply ICT in designing and moderating powerful learning environments

At the Faculty of Education this has led to the development of the present curriculum model based on collaboration with regional schools. The model integrates subject studies and professional preparation and is nationally known as 'The Utrecht Model'. It aims to meet the requirements of modern higher education as defined locally as:

'...education in which students develop into starting professionals and which takes place in interaction with the professional field. The professional field is involved in formulating competences, formulating and providing (study) assignments, giving feedback on students' results and in the assessment and development of knowledge. Students carry out assignments in the role of the starting professional, which means that they produce work of a high level and that they can demonstrate that their work meets relevant current standards. ICT is an important tool in creating a rich learning environment as well as in creating the necessary conditions: the use of ICT makes it possible to organise educational processes differently.'

(HvU Education & ICT Knowledge Platform 2003, p.5)

1.1 Monitoring of ICT developments in (Teacher) Education

For the evaluation of its ICT policies the Ministry of Education commissions various studies, among which the ICT-Education Monitor. Monitoring of schools (primary, secondary, vocational and adult education) and the TT-provision for primary and secondary education has taken place on a yearly basis since 1997. For a summary in English of trends in the first 4 years see Kral et al. 2002. Since 2001 a qualitative dimension focusing on 'learning and teaching' has been added to the quantitative (ICT in figures) studies of the previous years.

The EPS project, being a major, national project was subject to an additional, dedicated monitoring procedure carried out by the Inspectorate. Trends in the monitoring reports can be summarized as: ICT as didactic tool has not been adequately integrated in the teacher training pedagogy; trainers' ICT expertise is at the level of basic skills, excepting those involved in expert centres and teacher education providers have too little knowledge about the educational use of ICT in schools. (Inspectie van het Onderwijs 2001a).

Collaboration with schools and collegial networking, though recommended, are scarce (Inspectie van het Onderwijs 2001b; Stegers 2002)

2. THE EU-PROJECT PRONETT

2.1 Project Definition

Coalition to define a EU-project with international partners was triggered by the urgency for action emanating from the various evaluation reports and the developing national benchmarks on ICT rich Teacher Education on the one hand and the lack of local educational leadership in the ICT-domain on the other.

2.2 Project Goals

The project's aim is to innovatively enhance, promote and build a European web portal community of Teachers and Trainees in Primary, Secondary and Vocational Education who will be able to collaboratively share experiences and gain expertise in the application of Information Communication Technology in teaching and learning.

A web portal offering a dynamic, interactive, virtual learning and content production environment is seen as a facilitating instrument.

2.3. Pronett WebPortal

The overall rationale for the portal was set against a comprehensive project literature survey in each of the partner countries regarding current trends in ICT in teacher education and teaching in general. (Koenraad et al., 2002). A broad spectrum of ILT and ICT research literature and national inspection reports were consulted and they provided the evidential premise for the Pronett assumption that teachers and trainees are still fundamentally having to learn to use information technology successfully and have yet to reach a level of competence where ICT is used routinely, appropriately and competently to assist and provide for effective learning and teaching.

The Pronett portal is a customized version of the Zope-based Content Management System 'Plone'. The design has been inspired by the project's literature study and critical features of successful professional development approaches in the ICT-E domain such as: needs based, learning by doing, enabling 'design & try-out & evaluate'-sequences, on-the-job elements promoting reflection and feedback (also in networks of teachers), collaboration between schools and teacher education organisations and universities (van Eck et al.2001).

Members have access to personal workspaces to which all sorts of content-types (file, picture, document, forum tool etc) can be added. An online visual editor to develop or adapt HTML files is optional.

The automated-registration feature of this Open Source software is considered important in this respect as it makes students and individual teachers less dependent on the software provision of their TT-provider and/or at their placement and workplace schools.

Especially in a competence based curriculum model this independence is essential as it offers users possibilities to experiment with web based teaching regardless of the presence of (or access to!) a local VLE. It also opens up possibilities to solicit for alternative ways of help or coaching in the event of the (not so unlikely) absence of adequate local support or tutoring.

It will also help to disseminate the project as there are no administrative obstacles for teachers and trainees of other organisations in the European member states to start participating.

3. THE IMPLEMENTATION OF PRONETT AT THE FACULTY OF EDUCATION IN UTRECHT

3.1 Implementation context

Next to contributing to the general PRONETT Project objectives the Utrecht based project partner defined targets to support the further development of The Utrecht Curriculum Model and in this way also contribute to the realisation of the ICT-rich Teacher Education Provision as benchmarked by the Dutch national ADEF-ICTnetwork (Koenraad et al., 2004), a federation of Dutch TT-providers.

In this view workplace and school practice related activities are seen as the best part of the curriculum through which the teacher education institute can contribute to developments in the ICT-E domain at regional schools. Consequently workplace based learning is expected to be ICT-rich and to facilitate the student teacher in bringing innovative practices to the school and contributing to school defined needs.

3.2 Implementation Goals and Strategy

A central goal of pilot implementation phase was to evaluate the feasibility of using school based defined needs as input for curriculum activities, so as to provide input for the design of materials for the full implementation of a demand driven ICT-curriculum.

An implementation scenario described by Collis & Moonen (2001, p.45-66) has been adopted combining top down and bottom up strategies: management as initiator of the full implementation and middle management (ICT-coordinator) to function as leader of the pilot implementation. And involvement of specific, potentially successful teams (Modern Languages, Internationalisation Office) and individual teachers (advanced ICT-users)

To reach the goals mentioned experiments by teacher educators were carried out. A working party with school based ICT coordinators started to operationalise regional collaboration.

3.3. Results

After having been introduced to the portal functionality by PRONETT-team members in individual sessions 6 teacher educators in 4 different teams (English, French, Spanish and History) decided to participate in the pilot implementation. Methodology courses (n=6) involving the production of web based materials by student teachers (n=91) were selected as the context for experimentation.

One teacher in the Internationalisation Office decided to experiment with the provision of virtual support for a 2-day, live conference event for student teachers in the Netherlands (n=75). Typical course activities and tasks are:

- motivated selection of authentic resources (paper / multimedia) on the basis of instructional criteria
- presentation of educational reviews of course book materials and URLs
- design of communicative activities and task based activities such as WebQuests for a specific target group of learners in the 12-16 age range by dyad project teams.

An important motivation for the trainers' participation was the provision of facilities for computer supported collaborative production of materials and the opportunity for students to actually publish their results¹. The trainers, with a view to their personal professional development, also welcomed the chance of experimenting with virtual environments and blended² learning.

On the basis of the available, paper based course syllabus the teacher educators and the PRONETT coach collaboratively developed ideas and defined the related functional specifications for the online support of the courses. Some training was given to develop vital skills for the realisation of their role as e-moderator (e.g uploading relevant documents, presentation of links, placing last minute messages, allocating rights to individual students for specific folders). For those courses that required students to develop web-based materials specific templates (WebQuest, E-zine format) were developed. Partly to avoid the need for training students in the use of yet another piece of software beside PRONETT (e.g. FrontPage) and partly to facilitate the publishing process of those materials within the PRONETT environment. For more information on the implementation pilots in the Modern Language Department see (Koenraad et al., 2003).

3.4 Regional Collaboration

With the aim to implement the workplace based learning concept a working party consisting of the Archimedes implementation team and ICT-coordinators from 4 regional, affiliate schools has explored the feasibility of using school based defined needs as input for curriculum activities. This has resulted in an inventory of (pre)conditions for the implementation of school defined curriculum tasks, a (concept) list of school defined ICT-needs and a description of the tasks and responsibilities for the actors involved in the task definition and coaching of the developmental work by student teachers.

4. IMPLEMENTATION PILOTS AT CARDIFF UNIVERSITY

PRONETT members in Cardiff included PGCE pre- and in-service and BEd Voc. students.

Main activities included:

- Folders for web publishing and creation of quest templates (In-service teachers)
- Reflective and periodic Journal accounts whilst on placement. (PGCE)
- In-service peer group interactions in developing teaching resources
- BEd voc degree students for conferencing and writing collaborative papers ~ an initial trials with power point presentations.

All products processed within PRONETT were part of the formal assessment process in the course programmes at Cardiff. Work was evaluated to the criteria stated for the assignments.

¹ Up to 2002 individual trainers and students did not have access to local web publication facilities.

² We adopt the definition of 'blended learning' as: the combination of online learning and classroom training; it consist of a mix of ICT supported learning activities combined with some traditional classroom activities".

4.1 Collaboration

Member workspaces have been effectively used for projects which encouraged collaborative use of shared folders. An example is the development of and preparation for art work over a period of time and other approaches to learning. (Constructing paper assembled landscapes as a design brief for a landscape project) Here, the front web page format of the topic folder was used to display the class results at the end of the workshop session by hosting and editing digital photographs. Project information could be beamed directly to the whiteboard from portal workspaces to illustrate construction and overlay techniques etc.

The portal demonstrated functions here which were both virtual and real time in application. The portal appeared to be an effective classroom instrument for learning as well as a collaborative platform for preparation and delivery. Such workshops can be either student group led or teacher centred depending on context or topic. Results, and other information etc. are always accessible to all students if work is published in a project folder item within the portal: as non members can access this interface menu area in the portal.

4.2 Learning Journals and placement portfolios

Many students kept comprehensive placement portfolios including their fortnightly learning journals in their workspaces. These were shared with given roles assigned to tutors and peers alike in terms of editorial access. Tutors could access and examine files from home or at work whilst trainees could complete and update portfolios as required. Lesson folders and home work project folders could be published and accessed by class groups in the catalogue section of the portal as non members. Workspaces and PRONETT were thoroughly appreciated by students who were placed at distance from the University, e.g. the Channel Islands~Jersey.

5. PROJECT EVALUTION

5.1 Evaluation research design

To measure success at achieving the PRONETT aims and objectives instruments for both formative and summative evaluation were developed. Evaluation of the pilots carried out during the first year of implementation was aimed at validating the original portal design and collecting information leading to formative improvements and implementation procedures. Evaluation Instruments used at for the collection of user experiences and opinions were a printed and online version questionnaire, a Bugs and Feature Collector function in the portal, and online forum responses to reported problems. Instruments used for the evaluation the project's development and results observations were made of users at work and partner statements and reflections as reported in the Interim Evaluation Reports were screened. And user statements and comments in questionnaires and focus group reports were analysed.

5.2 Project Results

As planned a preliminary study was completed to validate ideas on project development strategies and to establish general design principles for the web portal (Koenraad et al., 2002). The incremental and user research based design and development of the Pronett web tools has resulted in a portal with a multilingual (EN, NL, ES, Catalan) interface at www.pronett.org. The Pronett project partner organisations (n=4) implemented the Website-functionalities by integrating them into the work routines and course modules of teachers educators responsible for curriculum areas such as ICT and subject pedagogy/methodology. Implementation has been focused on the student teacher. Experiences so far have shown that it is possible to use the portal to support such diverse contexts of use as:

- an online support for 'traditional' courses (blended learning)
- the collaborative production of web based materials by teams
- virtual facilities to prepare and support a (student) f2f conference
- web publication of student made resources
- coaching/mentoring of student teachers at a distance (learning journals)
- student portfolio.

5.3 Quantitative results: Portal Membership Development

Since the portal site's launch in November 2002 various student teacher cohorts, teacher trainers, teachers and others have registered, totalling some 1306 accounts at the time of writing in November 2004.

As system maintenance has been carried out over time in terms of removing double or dead accounts (due to failed registrations) the graph below gives some idea of the quantitative scope of the project during its first 2 online years.

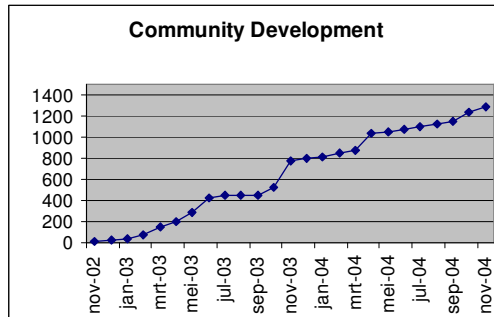


Fig. 1 Portal Membership

Partner reports and membership analysis show that the quantitative target as to the portal key users (=student teachers) involved in this project (n= >400) has been reached. As the portal provided free membership and individual members did not all recorded personal data or contacted us it is difficult to assess the realisation of the initial targets defined for other user types and categories (teacher trainers (n= >50), school based student teacher coaches and mentors (n= >100) and in-service teachers (n=200). The graphics of the server log files in Fig. 2 below testify of member activities and visits to the portal with an average of some 567 unique visitors per month in the final year of the project.

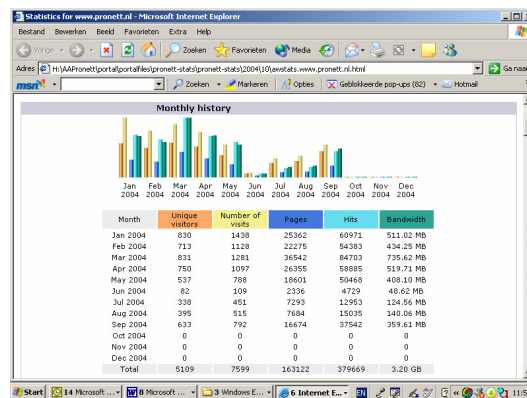


Fig. 2 Portal Use in 2004

5.4 Qualitative results

In addition to local online questionnaires a generic large scale questionnaire was used in the final stages of the project to collect users' views on the usability of version 2.0 of the portal and its contribution to community development addressing educational use of technology issues.

5.4.1 Pronett Web Application

The total response amounted to 135 with contributions spread over the partnership. An analysis of the final survey data shows that 54% of the portal members are satisfied with the lay-out and userfriendliness of the system (see Fig. 3 below). About half of the members expect to continue using the portal.

Although users report to find the portal a useful ICT-tool (68%) appreciating uploading facilities, seeing ideas of other students and getting direct feedback of work done, the portal's potential for collaborative learning is least appreciated.

Triangulation with the views expressed by the partners in their interim and final evaluation reports shows that in partner institutions where curriculum based initiatives are actively encouraged and where teacher educators purposefully embed the use of the portal in their teaching with defined explicit tasks for students cooperation within local teams and groups does take place.

The Pronett portal was also submitted for review in the European Academic Software Awards Competition 2004 (Ref. Nr. 151) and got to the second round. Views expressed by the evaluators ranged from extremely positive and to critical. Interestingly the range of views expressed mirrors what is found in the portal users evaluation.

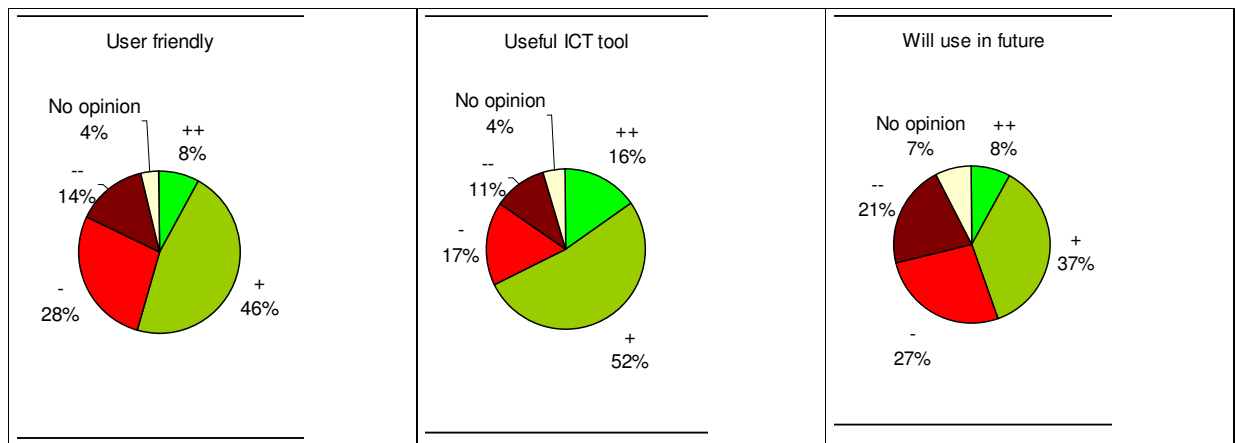


Fig 3. User survey data

The scheme design of the portal and associated functionality demonstrated that a generic and adaptable web based platform for participants can work effectively if coordinated facilitators or e-moderators are sufficiently skilled and engaged with the approaches they promote on the web portal. The project aims and related objectives did realize and support the development and growth of communities of learning and practice in ICT/ITT amongst participating portal members. Given free and open access to the portal, further interest will increase in the collaborative strategies which can be innovatively staged within and between ITT institutions.

5.4.2 Pronett Materials Catalogue

As far as goals in the area of provision of design & publication tools and re-usable teaching materials for students is concerned Pronett is apparently not seen as a resource database partly because there is a reluctance to place work in a domain where there is varying quality and no “interface” monitoring function. Also lack of understanding about Meta data and classification does not help. Given the nature of current assessment and the high focus on individual performance against course criteria it is difficult to see students showing their work in the catalogue for fear of plagiarism and or ridicule if they fall below par or expectation.

In addition –as indicated by the Cardiff focus group feed back sessions- good students did not want their work adapted by other course members or used elsewhere in case they fell foul of copyright issues. There was also a reluctance to publish work in the catalogue section of the portal as students were conscientious of their work being “peer reviewed” against grades and comments received from tutors.

For teachers and educators with respect to this issue to realise the possibility of developing the learning object database for local and international support for knowledge sharing on the instructional design process (making professional feedback visible) and facilitating resource based teaching (meta-evaluation of final products) should be more explicitly highlighted.

5.4.3 Regional Collaboration

Another factor that is relevant in this respect reported by partners is that the need for the portal to support ict-rich teaching opportunities expressed by schools (e.g. by students during teaching practice) is as yet limited.

This also explains the underrepresentation of in-service teachers and mentors in the Pronett membership and the relative limited total amount of use made of the portal.

However, experienced and new Pronett participants endorse their perception that Pronett as a future fully implemented portal product will present a formidable tool in promoting the desired change to enable many others to begin to use “ICT to learn” in a variety of teacher training settings. The portal scheme is nonetheless open to many other applications, teaching programmes and contexts given its generic, open and customizable structure.

5.4.4 Pronett ambitions for an international Community of Practice

Overall, the roles of reflection and professional development and the sharing of tacit knowledge between identified and local collaborative working groups were well supported and effective where they worked around collective tasks and projects in teaching practice situations. Pronett up to the final evaluation period was seen to meets user’s expectations as a useful collaborative “work bench.” At least this was the perceived view as reported e.g. by Cardiff and Gent. It is seen as a constructive web tool which facilitates working together on assignments and events. Both online questionnaire and focus group evidence highlights the portal role in this respect.

A key point reported by a few Pronett users, was the difficulty of locating other European partner teachers who would be willing and comfortable with the prospect of participating and collaborating online. Language difficulties and

educational setting and perhaps variability in levels of standard and competence, may have been factors which mitigated against participation in suggested projects.

Also at project level, based on observations of the publicly shared areas of the portal we conclude that it appears that student teachers in a formal education setting appear not to start exchanging information and materials (transnationally) in an un-moderated portal of their own accord beyond their own course or project groups.

Circumstantial evidence on Pronett pointed to the observation that collaboration is not an automatic or self installing process. Individuals needed to know their place and how they intended to participate within a collaborative setting. If collaborative aspects do not exist in a programme of study or course then such activities need to be worked out before online strategies are entertained.

It can be said, that effective collaboration strategies as approaches to learning, online or otherwise, have yet to enter main stream educational thinking, practice and assessment. Ironically, in many forms of employment outside of education effective collaboration is the only key and approach which determines effective performance and team work outcomes.

Additional user surveys and server data analysis will be needed to assess the size and form of activities, collaboration and knowledge-sharing that takes place in individual workspaces.

5.4.5. Dissemination

In conclusion, Pronett at its current stage of development with a limited number of materials and curriculum driven activities and no moderating activities at portal level has a limited take up as a peer-to-peer application. Even so there is evidence that students from other course and institutions do apparently start using the portal of their own accord. Presently, the main drivers for portal implementation are based on curriculum based initiatives i.e. teacher educators who independently embed the use of the portal in their teaching and define explicit tasks and activities for students to do. Also it is expected that due to the effects of the dissemination activities in the last year of the project's life and the availability of the project publications at www.feo.hvu.nl/pronett/ membership will continue to grow.

6. CONCLUSION

The Pronett portal was designed to offer a virtual learning environment (VLE) which had the required quality to service a user centred and networked approach to support collaborative learning strategies across a range of ITT institutional providers in European countries. Although collaboration did not take place on the major scale envisaged the project still afforded an excellent platform for teachers and students to participate effectively in their training in local roles. The roles of reflection and professional development and the sharing of tacit knowledge between identified and local collaborative working groups were well supported and effective where they worked around collective tasks and projects in teaching practice situations. Finding mechanisms and strategies however, to assist and promote online portal collaboration between European partners remains as a key objective and one which can be accomplished, but it necessarily raises the important question of how this can be done given that partner institutions were very diverse in the kind of training provision, level and client groupings (Parnell & Koenraad 2004).

A further analysis of interim partner reports and reactions from focus groups has resulted in the identification of the following factors that contribute to the promotion or demotion of the project and community development.

Promote

- Free and open access to the portal will increase further interest in the collaborative strategies which can be innovatively staged within and between ITT institutions
- As a collaborative “through the web” “content management system” (CMS), Pronett represents a significant change in the current educational portal landscape.
- Pronett is pioneering a unique way forward for users to collaborate and construct shared understandings of teaching and learning in networked classrooms
- The portal scheme is open to many other applications, teaching programmes and contexts given its generic, open and customizable structure
- Similarly, trans-national issues, such as language transcription, institutional pedagogical approaches, different ways of supporting teacher trainees, styles of learning, respective staff development involvement, placement and instructional strategies continue to push and pull portal functionality and implementation
- Keeping portal components to a minimum and not going “feature rich”, doing things simply, looking at open learning methodologies and obtaining leverage from other portal components is the way forward

Demote

- In the course of the project an update of the Plone version used for the portal and some customisation of CMS for the project have taken place. This has resulted in changes in the interface and some occurrence of bugs.

This and the initial absence of diacritical signs (important for Catalan/Spanish) have contributed to local implementation problems.

- Teachers and trainees are still fundamentally having to learn to use information technology successfully and have yet to reach a level of competence where ICT is used routinely, appropriately and competently to assist and provide for effective learning and teaching
- If implementation strategies are not targeted to highlight other or new educational possibilities of the portal than the installed IT-facilities and VLEs that staff have access to or use adoption of the portal is not likely to take place.
- Ironically enough, the-not-invented-here syndrome is found especially among the more advanced users of ICT in academic staff circles: they appear less prepared to give up personally developed procedures and tools.
- Most surveys show that workload and the use of time worries lecturers most about teaching online. Despite anytime anywhere scenarios portals are very time hungry for all users and participants.
- In sum: without implementation coordination characterised by educational leadership and model behaviour, prominently supported by local management, the educational change needed for a successful introduction of a web tool like Pronett is not likely to happen.

Anticipating the further (local) development of competence descriptions for teacher educators and teachers (Simons, 2002, p.40-41; van Eck 2002, p. 31-39), possibly also at a European level (Admiraal et al., 2003), the PRONETT consortium will proceed to develop the portal offering opportunities for autonomy in the development of attitudes and competences relevant in the near future for both students and educators. A shared infrastructure for e-twinning organisations, international activities and curriculum projects is available for the development of competences in areas such as virtual co-operation, instructional design, blended learning, e-moderating, practising Resource based teaching and preparation for contributing to and using Learning Object Repositories (Cohere Group, 2002).

Other Teacher Education provision organisations or individual (student) teachers and teacher educators are cordially invited to freely use the portal and its tools, share experiences and/or join our initiative at www.pronett.org

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