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For Lifelong Competence Development

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Abstract (for dissemination)	In the second 18 months of the TENCompetence project, we elaborated the model for ad hoc transient communities and network management, to include profile and eportfolio aspects and redesigned the application as a service.
Keywords List	learning network, community, policies, ad hoc transient communities, sociability

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Chapter 4. Learning network management

Domain model

A learning network is, among other things, a *community* of people (*members*) who share the intention to learn something about a particular *domain of knowledge*. Actually, calling a learning network a community presumes already too much, as its connotation is one of people who somehow interact and have a shared history. We do not assume this to be the case up front, although it may, as a matter of contingent fact, happen to be true for some of the members. Eventually, it will become true. Either way, we assume that *strengthening the social ties within a (learning) community will positively affect learning*. So, through active participation in the community the learning goals people have set for themselves will be attained more effectively, more efficiently, more attractively; or, put differently, reshaping a learning network as a community enhances the quality of the members' learning experience. In order words, a learning network should self-organise such that a community emerges. The main characteristic of effective communities evolve around social space and social interactions (Kester et al., 2006; Kreijns, 2004; Nichani, 2001; Rovai, 2002), next to a clear boundary (Kester et al., 2006; Weber, 2004), common goals, rules and sanctioning mechanisms (Kollock & Smith, 1996; R. Koper & Sloep, 2003). Another characteristic is the heterogeneity of the community population and the different roles each of the members can take.

The model for network management thus evolves around guidelines that foster social space, guidelines for community characteristics and guidelines for community population. To foster social space, three social prerequisites should be met in order for social interaction, in particular cooperation, to occur: (1) any two individuals must be likely to meet again in the future (*continuity*), (2) all individuals must be able to identify each other (*recognisability*) and (3) all individuals must be able to know how any other person has behaved in the past (*history*) (Kollock, 1998). Community characteristics are set by the proximate and ultimate goals learners have. The goal affects the amount of social interaction. Peer-tutoring could be one of the solutions to stimulate social interaction. A community should be populated with people in various roles, or a mix of expertise, and types of people (trendsetters, lurkers, posters) (Nichani, 2001; Preece, Nonneke, & Andrews, 2004) and should allow people to take on different roles.

Even if it would be possible to force a learning network to become a community, this would never be as effective as a community that emerges from the learners themselves. Learning networks, like communities are dynamic with changing composition and purpose. Resilient communities are able to deal with these dynamics. The social structure of a network determines resilience. In centralized networks, activity evolves around a small core group of people. For a more resilient and efficient community the network should become less centralized. Good selection criteria for matching peers in the ad hoc transient communities should function towards a more stable and efficient network (Fetter, Berlanga, & Sloep, submitted).

Required functionality

Learning networks, and also ad hoc transient communities, rely on active participation of the members (Kester et al., 2006; E. J. R. Koper & Sloep, 2002) and should provide tools, applications and functionality that allow and encourage these interactions (E. J. R. Koper, Rusman, & Sloep, 2005; R. Koper & Specht, 2007) as well as contribute towards sustainability of the community. Following an analysis of popular existing online communities, we distinguish the following required

functionality that allows users to manage, organize, and regulate resources and communities (A. Berlanga et al., 2007).
Self-management. This is related to administration and sharing; permitting users to create own profile, contacts, communities, networks, resources, and tags, etc.
Self-organisation permits user to interact and react to member's resources: commenting, recommending, copying, subscribing, rating, bookmarking, seeing related resources.
Self-regulation allows users to control existing resources and communities: create private and public resources/communities/groups, mark communities/resources/groups as offensive.

Ad hoc transient communities

As we stated before, we believe that strengthening the social ties within a learning community will enhance the quality of the learning experience. Mechanisms that allow or promote strengthening of social ties involve users engaging in joint activities in different roles. Role specific user characteristics and descriptors related to a particular activity are required. Users should be recognisable and identifiable.
Ad hoc transient communities are seen as the vehicle to organise this (Kester et al., 2007; P.B. Sloep et al., 2007; P. B. Sloep, van Rosmalen, Kester, Brouns, & Koper, 2006). Ad hoc transient communities serve a specific goal, are limited in time (i.e. dissolve when the goal has been attained), and operate according to social exchange policies that enhance social embedding and knowledge exchange.
Surveys among higher education staff indicated that having to repeatedly answer content related questions of students imposed a high workload; while they still indicate this as a valuable contribution towards the learning process (de Vries et al., 2005). Therefore our first implementation consisted of a peer-tutoring ad hoc transient community to assist learners in finding answers to content-related questions (Kester et al., 2007; P. B. Sloep et al., 2006; Van Rosmalen, Brouns et al., 2007a; Van Rosmalen, Brouns et al., 2007b). This proved to be very effective, not only towards the proximate goal of obtaining an answering to an immediate pressing question, but also towards the more ultimate goals of improving interactions and providing learner support and even of promoting social space (A. Berlanga et al., in press; van Rosmalen et al., 2008; Van Rosmalen, Brouns et al., 2007a; Van Rosmalen, Brouns et al., 2007b; Van Rosmalen et al., in press; Van Rosmalen, Sloep et al., 2007).

Theoretical background

There are examples that large networks, that allow sub-communities to arise such that a few community members get together to address a specific goal, are usually more effective (Lui, Lang and Kwok, 2002). That would support our notion of ad hoc transient communities. Setting up ad hoc transient communities does not guarantee that the desired effect will occur or that learner will interact. Solely providing environment with, suitable, tools does not mean that people will use it or use it for the intended purpose. We analyze motivational factors and incentive mechanisms and their effect in successful communities as described in the literature; we look at effects of these mechanisms both as proposed by relevant theories and as found in successful online communities (A. Berlanga et al., 2007). Based on that, we propose and describe a design rationale for a profile and portfolio type incentive, and argue why it will enhance participation in (ad hoc transient) communities. There is an extensive literature on how to set up and maintain communities as well as on policies for effective communication and stimulation of participation (Bitter-Rijpkema, Martens, & Jochems, 2002; Bogenrieder & Nooteboom, 2004). In the literature,

many theories on motivation to contribute to and participate in, mostly peer to peer, communities have been described. Researchers looked at psychology and community behaviour reviews for theories to explain users' behaviour in communities and mechanisms to enhance contributions and participation. The self-organisation, social exchange theory, systems, and expectation-state theories provide sufficient backing for the general principle behind the mechanism of ad hoc transient communities. Additional support for our claims can also be found in behavioural and psychological literature on motivational mechanisms on why people would participate and contribute in communities. (Millen & Patterson, 2002) and (Erickson & Kellogg, 2000) argue that visualising users and their actions in a community is important to stimulate participation. (Cheng & Vassileva, 2005) present five theories (reciprocation theory, consistency theory, social validation, persuasiveness of liking, theories of discrete emotions) to explain why community members would participate and contribute; they applied design rules based on these theories to a P2P system used by university students. (Lui, Lang, & Kwok, 2002) summarised psychological studies by several authors to explain motivation and incentives for participation in communities and reported that both individual and interpersonal factors play a role in the motivation of people. The individual factors again can be divided into extrinsic motivations (rewards, personal needs) and intrinsic motivations (altruism, reputation). (Ling et al., 2005) applied design principles based on social psychology theory to the Movielens application, a movie rating site; they were able to confirm that people would contribute more when the system showed them how unique they and their contributions were, and when they set specific goals to attain. Most authors seem to conclude that incentive and reward mechanisms have to be in place for people to share knowledge.

Profile and eportfolio information for enhancing social interaction

For social interaction to occur at all, people need to get acquainted with each other. This is done on the basis of personal information. Visualizing the users in the system and their contributions to and participation in the community should promote contribution and participation because it raises awareness of a user's own actions and those of others; it also demonstrates people's responsibility and the consequences of their actions (Erickson & Kellogg, 2000). (Meyerson, Weick, & Kramer, 1996) and (Coppola, Hiltz, & Rotter, 2004) discuss the notion of swift trust, which emerges in temporary teams whose existence is formed around a clear purpose and common task with a finite life span. Swift trust helps to establish engagement and commitment. This is exactly what is required for our ad hoc transient communities. Several studies showed the relevance of background information on personal profile and expertise information on knowledge exchange and building of trust in teams that had to jointly work on a product ((Rusman, van Bruggen, & Koper, 2007; Rutjens, Bitter-Rijpkema, & Crutzen, 2003). An easy to use template, pEXPi (abbreviation for personal expertise inventory or personal identity and expertise profile) was developed to allow community members to introduce themselves and their expertise (Rutjens et al., 2003). This pEXPi has been used successfully in various academic communities and according to the participants this contributed towards learning interactions and emergence of community feeling (Ogg et al., 2004). We believe that a user's profile should be designed not only to give information about the learner, but also to foster interaction (A. Berlanga et al., in press), encourage participation and motivation (Brouns et al., 2007) and develop trust (Rusman et al., 2007). Profile and eportfolio information is also required for the peer matching selection criteria for the ad hoc transient communities. To that end, we conducted a first exploration of existing popular profiling sites, to determine what kind of information is made available in user's profiles and how they motivate

registration and stimulate contribution. All these sites have in common that the services they offer evolve around the members' profiles. Given their capacity to encourage members to be connected with other members and their growing popularity, we believe that some lessons can be learned from these successful sites. Registration for all of these sites is free, because the main aim of these sites is to get as many members as possible. The sites provide extensive information about the benefits of the membership and importance of the profile and assist in compiling the profile, often already in the registration process. Most sites ask the members to complete only a brief profile during registration, but provide amply opportunity after registration to extend and expand on the profile, even beyond the bare necessity for the type of profiling site. The main strength of these sites is the affordances for creating connections (A. J. Berlanga, Bitter-Rijpkema, Brouns, & Sloep, submitted).

Model implementation

The peer selection criteria and algorithms that have been used in the first prototype have been improved to ensure a proper selection of peers and allow fallback in case some selection criteria could not be met. This turned out to be more important for the tutor suitability and availability. Tutor suitability is only calculated when content competence has a value higher than 0. And for availability we had to incorporate a time-span in which peers were excluded from the invitation cycle when they did not respond for a while, to prevent the invitation cycle from failing.

Our first technical implementation of the model for peer tutoring ad hoc transient communities was not yet set up as web services and did not fully comply with the TENCompetence infrastructure. A substantial part of the model implementation relies on LSA (Latent Semantic Analysis). Configuration of LSA parameters greatly depends on the type of resources in the domain as well as on the subject domain itself. We designed and tested algorithms to automate setting up of the document collection, document space, construction of list of common words to be excluded, and parameterization of the SVD options.

Next we redesigned the first prototype to suit the PCM infrastructure and available data and indicated extension points. We made a full inventory of data we required, and whether that data is present in the current PCM services and more importantly could be retrieved as required from the API. At some points, we either made small adjustments in our design, for example to use alternative tools, or ask for extensions of the current PCM services. For those we submitted change requests. Change requests involve extension of database structure to store additional required data and options to enter these data, as well as extension to the PCM API. Another aspect the PCM infrastructure has to deal with is related to privacy of user data. Because at some moment of time we at least expose the peer's name and email address, the users must be able to indicate whether or not this data is publicly available.

Social help usage profile

In any learning network for lifelong competence development, providing proper learner support services is of paramount importance. And as we illustrated in our model, turning a learning network into an effective and efficient communities relies on strengthening the social ties in the network. So, there is a major role for learner support services that involve other people that provide, part of, the support. In that, the social support serves a double purpose. First of all, it solves the immediate need of a learner who has a question or request for support. Secondly, because this is brought about by involving other people, it works towards strengthening social ties.

There are several possibilities to supply a social support system. A major distinction can be made by whether the learner looks around for suitable peers and contact them directly or whether the learning network provides a services to recommend suitable peers and sets up a facility for learner and peers to communicate and connect. For both approaches it evolves around being able to find the most suitable persons. Keywords here are *finding, suitable* and *connect*. To enable this we need different kind of data. First of all we require information of all people in the network; this entails personal information, profile information, as well as eportfolio information like competences, proficiency level, interests, and actions taken in the learning network (i.e. the relationships between users and between users and objects). This information then has to be visualised in such manner to the network users that they can use this to decide whom to contact or made available to the system in order to be able to select suitable peers. The system than either can present this as a list of recommended people and allow the learner to initiate contact, or the system can use this list to set up an ad hoc transient community. This means that there is a lot of overlap between the Social help usage profile, the Overview usage profile and the ePortfolio usage profile, not only in data used, but also in functionality offered. And at a slightly lower lever, the profile is linked to the Follow course and Personal development planning usage profiles, mainly in data used. An example use case is provided below. The Social help usage profile is elaborated in Appendix 1.

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Appendix 1: Social help usage profile

Usage profile Social Help

The social help usage profile describes a learner support service in which other learners in the network are engaged in providing assistance to learners who have a particular request for support. After a learner has formulated a question, the TENCompetence infrastructure assists in finding the most suitable person(s) to answer this particular question. There is overlap between the social help, overview tool and ePortfolio usage profiles in data used and functionality offered. There are also relations to the follow course, CDP and PDP usage profiles, mainly in data used. A generic model for a social help service is depicted in figure 1.

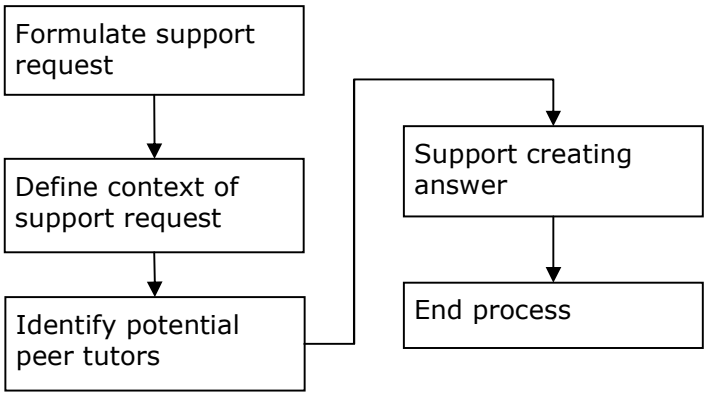

Figure 1: Generic social support model

There are however, alternative flows possible (see figure 2). The most distinctive aspect is whether the learner decides whom to contact, or to rely on the system to do all or part of the selection of suitable people. Some scenario's are provided in the use cases below.

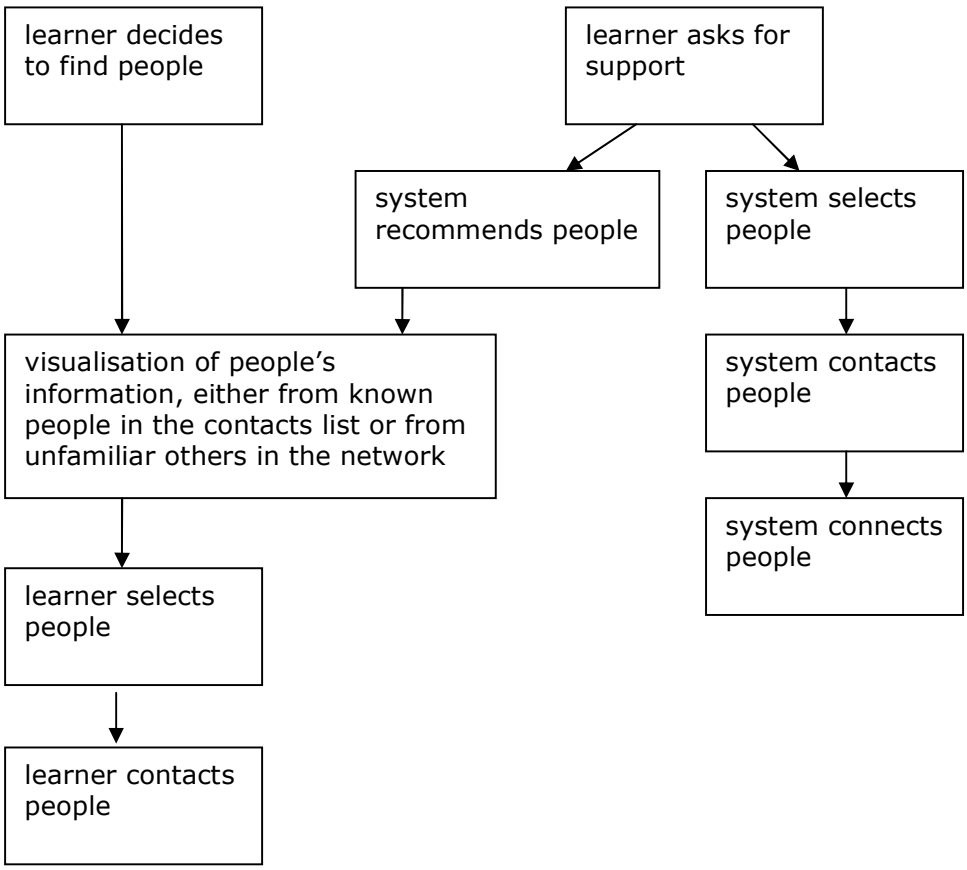

Figure 2: Alternative flows

In the use case below we also describe some events that are prerequisites for the social help usage profile to operate, but factually do not belong to the social help usage profile. Some of these steps should be taken care of by the ePortfolio and the CDP usage profiles.

Scenario 1: Ad hoc transient community for support to a content related question

Description

Suppose we have a Community on Psychology with a set of action A1 - A10. The user Philip has registered for this community and has determined that in order to meet his goal of getting acquainted with the domain of Psychology he has to study A1, A2, A3, A6, A7, A9 and A10. Next, we know that Philip given his working experience and prior studies has exemptions for A5 and A6 and has already successfully finished A7. Finally, let's assume that Philip while studying A1 Quantitative data analysis, runs into problems. He has a problem understanding the relations between a number of concepts and as a consequence he is not able to complete an assignment. He studies some additional literature and searches the web, to no avail though. Philip is studying on his own and thus out of touch with any

peer students decides to pose a question to the 'on-line tutor'; he describes the general problem and his question.

Below we outline the most extensive flow of events for such a scenario, but omit from the flow those events that factually should be dealt with by the ePortfolio, CDP, or PDP usage profiles, even when those events include functionality and not just data.

This scenario could also be followed for any other type of question or request for support and is not restricted to content-related questions.

Actors: Learners and peers, system
Primary Actors: Learner, system
Flow of Events

1. While working for action A1, Philip has difficulty understanding some concepts. The resources in the action do not provide sufficient detail or are of the wrong level to help Philip in finding the answer himself. He decides to look for support.
2. Philip accesses the support form that is available from the action or the community and poses his question in sufficient detail indicating which action sprouted the question.
3. The form provides detailed information on how to phrase his question with sufficient detail to allow the system to select suitable peers.
4. The system determine to which action the question belongs, searches for related resources, selects the most suitable peers and invites them to assist Philip in finding an answer to his question.
5. The peers can accept or decline this invitation, giving a reason for this decision.
6. When the peers accept the invitation they indicate how competent they perceive themselves.
7. When the required number of peers has accepted the invitation, the system sets up an ad hoc transient community (e.g., forum or wiki) that can be accessed only by Philip and the selected peers. The ad hoc community contains the question, related documents and a guideline.
8. The system notifies Philip and the peers that a sufficient number of people have accepted and ask them to join, providing access to the ad hoc community.
9. Philip and peers can discuss the question, using the related documents as starting point, and jointly reach a solution or answer to the question.
10. When Philip is satisfied with the answer he can close the discussion, rating the answer and the contribution of the peers.
11. Philip also has the possibility to add the peers to his contact list.
12. The system archives the ad hoc community.

Model for content related questions:

Precondition: A community with a competence profile, competence development plan, set of actions and a set of users with their profiles indicating their progress with regard to the actions and competence proficiency level.

Main steps:
1. *Philip* poses a question
2. The *system* determines
    a. the most relevant text fragments
    b. the appropriate actions

c. the most suitable peers
3. The *system* sets up a collaboration space (wiki/forum) containing the question, the text fragments and guidelines.
4. The *system* sends invitations to the selected peers to assist.
5. Philip and the *peers* discuss and formulate an answer in the collaboration space.
6. If answered (or after a given period of time) *Philip* closes the discussion and rates the answer.

Postcondition: The answer is stored.

Alternate flow I
An alternate flow is possible. At step 4 above, the system selects the most suitable peers, but in stead of inviting the peers on behalf of Philip, the system present Philip with the list of selected peers, together with additional information (profile, eportfolio, etc) to allow Philip to choose peers himself.
The flow of events can stop here, or continue with alternate flow II.

Alternate flow II
When step 4 is partly replaced by alternate flow I, the system can continue setting up the technical infrastructure for the ad hoc transient community and make them available to Philip and the peers he selects.

Scenario 2: Finding people

For the scenario described above a different approach can be taken. It still involves setting up an ad hoc transient community, but more initiative is left to the user and system involvement is less.

When a learner has a question, the learner can choose whether to contact people they already know or look for support by somebody else. Again, there is a choice; the learner browses the learning network for other people. Here the user depends on availability of user profiles and visualisation of profile relative to the question. Or the learner asks the system to choose for him (like described in the first scenario) or asks the system to support him in the selection process. In the latter case, either the system assist in providing access to users's profiles like in the Overview usage profile or presents visualisation of users' profiles related to the support request.

Scenario 3: Community formation

- increase participating by actively connecting persons and creating shared experiences and therewith stepwise promoting community formation -

A well-engineer at a small specialised consultancy company is following a series of online courses to acquire the required competences on topics such as 'safety measurements: legal and technical', ' soil conditions', ' drill angle and techniques' and alike.

Unfortunately, being from a small company he does not know any peers in the network. Nevertheless while studying he is regularly confronted with the need to find peers to discuss problems and to work on specific assignments e.g.:

- Who can help me with the following question: "while studying the allowed combinations of type of soil and drill technique, I have arrived at –at least to my

understanding- an inconsistency in the applicable legislation and the optimal technique. Who can help me to answer this?

- For the course 'safety measurements: legal and technical' I have to do a small research project and to write an essay together with a peer. Who can help me?

Typical aim: Establish a community.
Typical users: Individual user trying to establish a community of peers with a shared interest.

Actors: learner, peers, system
Workflow:

1. The user opens the social help and launches the 'ask-us' and formulates his question.
2. 'Ask-us' reacts with the choice to contact one of e.g. (1) a list of known contacts for this person, (2) a list of last contacted by this person; (3) a list with users with matching profiles related to this person (4) a network visualization of ongoing related contacts (4) automatically contact the "best" peer.
3. The user selects one or more of the people from the list and browses their profiles. When you found a suitable person, he can contact them, either by using one of the communication facilities provided by the system, or via the contact details provided in the portfolio (email, telephone, street address).
4. The user sets up a communication facility (or request the system to do that) and invites his contacted persons to participate in the community.

Most important activities in this usage profile + related actions

Activity	**Relation actions**
Ask question	Access support form Complete support form
Select suitable peers	Determine action Determine support context Select relevant peers, using selecting criteria relevant for the support context Retrieve relevant documents
Invite suitable peers	Send out invitation Accept/decline Notify user and peers
Set up ad hoc transient community	Set up wiki Provide access to wiki to selected peers Add relevant documents to wiki Add question to wiki Add guidelines to wiki
Discussing problem	Create entries in forum/wiki Formulate answer Discuss answer Rate contributions Rate peers
Socialising	Add peers to list of contact or friends

In particular some important activities from the ePortfolio usage profile are mentioned below. Part of the data required is supplied by CDP, PDP and Follow course. Without these data the Social help usage profile is hard to implement.

activity	Related actions
Describing oneself	Create profile Update profile
Update portfolio	Add evidence to eportfolio, both by system as user. Define public and private areas and data in eportfolio.

Importance of PCM elements in this usage profile

	create	search	View ratings	rate	Share	forum	People / Chat	Element description	Mark as complete	Proficiency level of learner	Proficiency level / difficulty of element*	Direct accessible**	Concept / label
Community	--	--	++	++	--	++	++	?	++	++			
Competence profile	--	--	++	++	--	++	++		++	++			
Competence	-	+	++	++	+	++	++		++	++		++	competence
Competence development plan	-	+	++	++	+	++	++		++	++		++	goal/objective/to do
Action	--	+	++	++	+	++	++		++	++		++	
Resource	-	++	++	++	+	++	++		++	++		++	

User		++	++	++	++	++	++		++	++		++	
Assessment									++	++		+	

	wiki
Community	++
Competence profile	++
Competence	++
Competence development plan	++
Action	++
Resource	++

* = the difficulty level of the element in relation to the proficiency level of the learner, which should enable the learner to select elements that match their current proficiency level
** indicates whether the element should be directly accessible = searchable as opposed to only being accessible through the element one step higher in the hierarchy

Appendix 2: Dissemination

Publications and papers

Berlanga, A.J., Bitter-Rijpkema, M., Brouns, F., Sloep, P.B. (submitted) On the importance of personal profiles to enhance social interaction in Learning Networks

Berlanga, A., Kester, L., Sloep, P., Brouns, F., Van Rosmalen, P., Koné, M., Koper, R. (2007). Fostering Knowledge Sharing in Ad Hoc Transient Communities. in Koper, R., Griffth, D., & Liber, O. (eds.), TENCompetence Workshop on Service Oriented Approaches and Lifelong Competence Development Infrastructures Manchester, United Kingdom, January 11th - 12th, 2007. Manchester, pp 7-12.

Berlanga, A.J., Sloep, P.B., Brouns, F., Bitter, M., Koper, R. (2008) Towards a TENCompetence ePortfolio. Paper presented at TENCompetence Open Workshop, Madrid, 10-11 April 2008

Berlanga, A.J., Sloep, P.B., Brouns, F., Bitter, M., Koper, R. (in press) Towards a TENCompetence ePortfolio. International Journal of Emerging Technologies in Learning

Berlanga, A., Sloep, P. B., Brouns, F., Rosmalen, P. v., Bitter-Rijpkema, M. E., & Koper, R. (2008). Functionality for learning networks: lessons learned from social web applications. Paper presented at the ePortfolio Conference. October, 18-19, 2007, Maastricht, The Netherlands.

Berlanga, A., Sloep, P.B., Kester, L., Brouns, F., Van Rosmalen, P., Koper, R. (in press) Fostering Knowledge Sharing in Learning Networks through Ad Hoc Transient Communities. International Journal of Learning Technology

Brouns, F., Berlanga, A.J., Bitter-Rijpkema, M.E., Sloep, P.B., van Rosmalen, P., Kester, L., Fetter, S., Nadeem, D., Koper, R. (2008) Personal profiles: Facilitating participation in Learning Networks. Unpublished paper.

Brouns, F., Bitter-Rijpkema, M. E., Sloep, P. B., Kester, L., Van Rosmalen, P., Berlanga, A., Koper, R. (2008). Personal profiling to stimulate participation in learning networks. Paper presented at the ePortfolio Conference. October, 18-19, 2007, Maastricht, The Netherlands.

Fetter, S., Berlanga, A., Sloep, P. (submitted) Strengthening the Community in Order to Enhance Learning

Kester, L., Sloep, P. B., Van Rosmalen, P., Brouns, F., Koné, M., Koper, R. (2007) Facilitating Community Building in Learning Networks Through Peer-Tutoring in Ad Hoc Transient Communities. International Journal of Web Based Communities 3(2), 198-205.

Kester, L., Van Rosmalen, P., Sloep, P., Brouns, F., Koné M., Koper, R. (2007) Matchmaking in Learning Networks: Bringing Learners Together for Knowledge Sharing. Interactive Learning Environments, 15(2), 117-126

Sloep, P. (submitted) Building a Learning Network through Ad-Hoc Transient Communities

Sloep, P.B., Kester, L., Brouns, F., Van Rosmalen, P., De Vries, F., De Croock, M., Koper, R. (2007) Ad Hoc Transient Communities to Enhance Social Interaction and Spread Tutor Responsibilities. in V. Uskov (Ed.), Sixth International Conference on Web-based Education WBE 2007, Chamonix, France, 14-16 March 2007 (pp. 548-554). Chamonix, France: Acta Press.

Van Rosmalen, P., Brouns, F., Sloep, P.B., Kester, L., Berlanga, A., Bitter, M., Koper, R. (2007) A support model for question -answering. In T. Navarette, J. Blat & R. Koper (Eds.). Proceedings of the 3rd TENCompetence Open Workshop 'Current Research on IMS Learning Design and Lifelong Competence

Development Infrastructures' (pp. 75-80). June, 21-22, 2007, Barcelona, Spain.
Van Rosmalen, P., Brouns, F., Sloep, P.B., Kester, L., Berlanga, A., Bitter, M., Koper, R. (2008) Question-answering through selecting and connecting peer-students. Paper presented at the ePortfolio Conference. October, 18-19, 2007, Maastricht, The Netherlands.
Van Rosmalen, P., Sloep, P., Brouns, F., Kester, L., Berlanga, A., Bitter, M., Koper, R. (in press) A model for online learner support based on selecting appropriate peer tutors. Journal of Computer Assisted Learning
Van Rosmalen, P., Sloep, P., Brouns, F., Kester, L., Koné, M., Koper, R. (2007) Question-answering – Connecting and Supporting the Learner. in F. Wild, M. Kalz, J. Van Bruggen & R. Koper (Eds.), 1st European Workshop on Latent Semantic Analysis in Technology-Enhanced Learning, March 29-30 (pp. 1-2). Heerlen, The Netherlands: Open Universiteit Nederland.
Van Rosmalen, P., Sloep, P., Kester, L., Brouns, F., De Croock, M., Pannekeet, K., Koper, R. (2008) A learner support model based on peer tutor selection. Journal of Computer Assisted Learning 24(1), pp 74-86.

Presentations

Brouns, F. (2007). Demonstration of TENC ad hoc transient community system. Demonstration of ATL at TENC meeting, Barcelona, Spain, 18 June 2007.
Brouns, F. (2007). Personal profiling to stimulate participation in Learning Networks. Presentation at the ePortfolio Conference, Maastricht, 18-19 October, 2007.
Brouns, F., Berlanga, A. (2008). Towards a TENCompetence ePortfolio. Presentation at the TENCompetence Open Workshop, Madrid, Spain, 10-11 April 2008.
Berlanga, A. (2007) Functionality for Learning Networks: Lessons Learned from Social Web Applications. Presentation at the ePortfolio Conference, Maastricht, 18-19 October, 2007.
Sloep, P.B., P. van Rosmalen, F. Brouns, A. Berlanga (2007). Wiki-based peer tutoring. ALT-C 2007, Nottingham, UK, 4 - 6 Sept 2007.
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van Rosmalen, P. (2007). Question-Answering -connecting and supporting the learner-. Presentation given at the TENCompetence workshop in Barcelona, June 22th 2007, Spain
Van Rosmalen, P. (2007). Question-answering – Connecting and Supporting the Learner. Paper presented at the 1st European Workshop on Latent Semantic Analysis in Technology-Enhanced Learning, March 29-30, Heerlen, The Netherlands.