Methopedia - Pedagogical Design Community for European Educators

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Abstract:

The paper will discuss theoretical, methodological and technical aspects of the community based Methopedia wiki (www.methopedia.eu), which has been developed as a part of the EU-funded collaborative research project "Community of Integrated Blended Learning in Europe" (COMBLE; www.comble-project.eu). Methopedia is a wiki and social community aimed at facilitating knowledge transfer between trainers/educators from different institutions or countries through interactive peer-to-peer support, and sharing of learning practices.

We describe how Methopedia has been developed though engaging practitioners in workshops with the aim of collecting known learning activities, designs and approaches, and how the models for sharing learning practices have been developed by drawing on practitioners' experiences, ideas and needs. We present and analyse the outcome of the workshops and discuss how practitioners have informed the practical design and theoretical issues regarding the design of Methopedia. The workshops have led to redesigns and also a number of important issues and problems have emerged. In the paper, we therefore present and discuss the socio-technical design of Methopedia, which is based on open source Wiki and Social Networking technologies. We describe the issues, functionalities and needs that have emerged from the workshops, such as metadata (taxonomy & tags), localised versions (multi-lingual) and the need for visual descriptions. Furthermore, we discuss the templates trainers/educators can use to describe and share their learning designs or learning activities, e.g. what categories would be helpful? How much metadata is relevant and how standardised or flexible the templates should be? We also discuss the theoretical considerations underlying the descriptive model of the templates by drawing on research within learning design and the educational pattern design approach. In particular we focus on exploring designs and descriptions of singular or sequences of learning activities.

Furthermore, we discuss some of the tools and concepts under development as part of the work on Methopedia, such as a flash based tool to structure learning processes, a pictorial language for visualising learning activities/designs and how we aim to connect to existing networks for educators/trainers and initiatives similar to Methopedia.

Keywords

Methopedia, Learning Design, Wiki, Community, Social Web, Didactic Process Map Language, Design Patterns

1. What is Methopedia - Objectives and Features

The main objective of Methopedia is to enable teachers and trainers across Europe to describe and share their learning practices in a way which is intelligible to their peers. This call for exchange is also described within the progress report "The use of ICT to support innovation and lifelong learning for all", which points to the demand for pedagogical innovation:

"New innovative pedagogical and didactical approaches are needed to take into account the future learning needs and changing skills and competences necessary for employment, self-development and participation in a knowledge-based, digital society" (European Commission 2008 p. 11).

An important step to reach these goals is the use of engaging learning activities:

"The reviewed studies showed that learner-centred guidance, group work and inquiry projects result in better skills and competencies and that interactive forms of e-learning can lead to a more reflective, deeper and participative learning, learning-by-doing, inquiry learning, problem solving, creativity, etc all play a role as competencies for innovation..." (Ibidem).

Different learning cultures result in a wide variation of learning approaches and activities across countries and organisations within Europe. Many of these could potentially inspire each other and enable innovation, but how can we facilitate sharing and exchange of different practices for organising and designing learning environments and activities? One approach could be to connect educators independent of their contexts as peers by using the power of the social web. Educators could meet virtually to exchange ideas and get inspired by new pedagogical approaches and learning activities such as group work, tandem learning, open spaces, web quests, video casts or group puzzle etc. This is the overarching objective of Methopedia. It requires a more or less agreed upon 'standard', which is not a trivial task as there are many different cultures and needs among practitioners; and also many different ways of understanding what learning practices, activities or designs are. We shall return to these points after giving a brief, initial introduction to the design of Methopedia and the descriptive templates for sharing learning practices.

1.2 The socio-technical design of Methopedia

The technology behind Methopedia consists of a wiki engine, a social community software and some developed add-ons. To choose a suitable technology, we created a requirement profile by searching for similar projects and also by evaluating different wiki engines. There are already many learning design resources on the Internet with collections of various learning activities, such as LearnLine (http://www.learn-line.nrw.de/angebote/methodensammlung/liste.php and similar initiatives: http://www.uni-duesseldorf.de/ttt/?id=91&kat=b15 and http://lehrerfortbildung-bw.de/kompetenzen/projektkompetenz/methoden_a_z/). Our general impression when reviewing these resources, however, was that many of the collections were quite static, without possibilities to rate, discuss, change or add new activities. From the beginning we wanted Methopedia to be an active community for sharing and creating because we believe that it is very important to engage partners and other practitioners in the process of developing a framework for shareable learning designs.
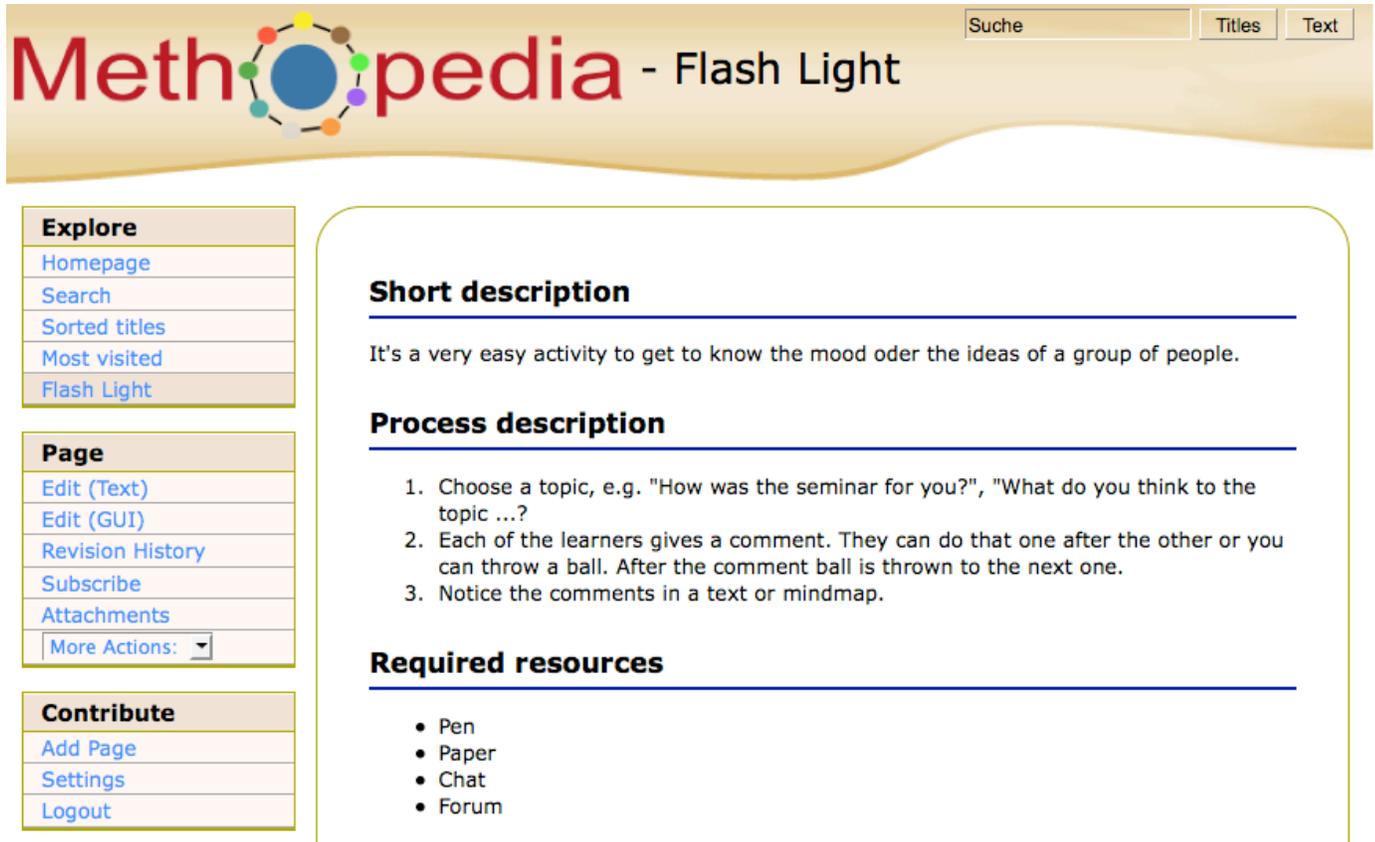
Therefore mainly four points were important in choosing suitable systems:

- **Customisability** to ensure that user groups can be involved in the continuous design of the wiki and in particular the shareable, descriptive templates for learning designs and activities. We wanted Methopedia to be adaptable to the different needs of Methopedia users. Since customisability is often linked to licensing, we preferred OpenSource.
- **WYSIWYG** to make the wiki editable with a GUI editior so that text based wiki markup does not act as a barrier for non-technical users. As the study "Are Wikis Usable?" (Désilets et al. 2005) points out, some users have problems with wiki markup.
- **Security** to minimize the risks of such a technology. For a wiki the main issues are spam protection and also rights management. The latter is also important if different user groups have varying needs with regard to sharable descriptive design models.
- **An active development community** to ensure the sustainability of the software.

In order to identify an appropriate wiki, we used "wiki matrix" (http://www.wikimatrix.org/) for a pre-evaluation. Based on our list, we found the best tool for our requirements to be the MoinMoin wiki (http://moinmoin.wikiwikiweb.de). While the well known MediaWiki (used for Wikipedia.org) and MoinMoin (http://www.wikimatrix.org/compare/MediaWiki+MoinMoin) have many similarities, security and customisability were our main reasons for choosing MoinMoin.

Methopedia consists of a wiki for sharing and working together on approaches and learning activities based on editable templates. The templates are very basic and encompass only a 'short description', 'process description,

'required resources', 'examples' and 'comments'. Through the workshops the template has proven to be effective in quickly describing smaller learning activities, whereas participants who wanted to share descriptions of courses or longer sequences of activities found the templates less useful.

Figure 1: The description of "Flash Light"

Every page within the wiki can be changed via a GUI editor and the Learning activity descriptions can be enriched with metadata and tags for better search results. As we shall return to the categories for describing metadata are still under development and will be enriched through the tags the users choose for their activities.

Figure 2: GUI editor, metadata and tags

Furthermore, collaboration will be supported by the Methopedia community, which is built on the open source social network engine Elgg (http://elgg.org). The aim of the community is to give educators the possibility to contact each other immediately and create networks.

Figure 3: Methopedia community

As can be seen from **Figure 2** we have arrived at a template for describing learning practices and some suggestions for various metadata to make the learning practices easier to find and share. In the following we shall outline some of the theoretical and empirical work, which has shaped the design of these and Methopedia more generally.

1.2 Sharing Learning Practices

The idea of sharing learning practices is not a new enterprise and much research and software development has been directed towards this end. Most noticeably there has been an increased interest in the area of 'learning design' ('designs for learning'), the use/reuse of Open Educational Resource and describing practices through a pattern approach or pedagogical scripts for collaborative learning (CSCL-scripts). Likewise, notions of packaging and sharing courses and content have been developed and resulted in standards like SCORM, LAMS, IMS-LD. These are all different examples of initiatives that aim at enabling educators to create, design and share 'learning designs and activities'.

As such there is a solid body of theoretical and practical work to build on and further develop. The variety of approaches however also requires considerations of what will be the most appropriate format to be used in Methopedia. This is partly a theoretical question, but equally we will argue it is important to involve practitioners in shaping both the technology and the ways in which learning practices can meaningfully be shared. For example a study by de Freitas et al. (2008) concludes that it can be very problematic to develop an overarching, elaborate framework and then expect practitioners to immediately recognise the value of this and subsequently start to use it. Instead, they suggest, it is important to understand that practitioners need to reinterpret and adapt such models, thus becoming co-producers of the models. Likewise Bloom (1956) and Anderson (2001) have described elaborated taxonomies for learning and teaching, and most categorisations of learning activity collections on the web are based on those. But what are useful metadata for practitioners? Should we use e.g. the "Six Levels of Learning" (http://oaks.nvg.org/taxonomy-bloom.html)? Quite simply: we did not know. One excellent approach to handle this situation was to adopt a user-driven approach: to leave the development open for changes.

The current design of Methopedia therefore rests both on theoretical enquiry (Ryberg et. al 2008) but also on the results of the design workshops where we have invited teachers and trainers to co-develop activities, while also involving them in the design of Methopedia itself.

Thus, we have employed a dialogue design-approach (Nielsen, Dirckinck-Holmfeld & Danielsen 2003) in the COMBLE-project, which means involving the application partners from industry and education in order to:

- Refine, negotiate and co-develop existing frameworks and approaches in collaboration with the partners/practitioners in accordance with their needs and inputs

- Identify the learning activities and resources, which are already in-use and co-developing ways of describing these.

This process has so far been realised through design-workshops which will be followed up by additional workshops (such as pattern design workshops, as we shall return to); but also by using Methopedia as an active, partly self-organising social community to continuously involve and collaborate with partners and other practitioners.

The first workshop was held in Tartu, Estonia in March 2009 and the second in Aalborg, Denmark in May 2009. The workshop in Tartu was a four hour workshop where participants were introduced to Methopedia and collaborated on creating learning activities. The second, and shorter, workshop included a brief introduction to Methopedia, and then subsequent development of concrete examples (this became more of a discussion of the templates and the functions of Methopedia). Ahead of the Aalborg workshop participants were however asked to fill out the templates with examples from their own practices.

The workshops have for one thing resulted in a number of concrete examples of learning practices and refinement of the descriptive templates, but also they have raised some issues and problems, which we will discuss and present our solution to. Both workshops indicated that there are many different views on how practitioners can meaningfully describe and share learning practices, for example in terms of categorising them, attaching metadata and relating them to particular pedagogical approaches. Questions such as: should the learning practices be categorised in terms of individual or group work, subject background or target groups and so forth quickly arose. Likewise, it became apparent that participants in the different workshops had different views on what would be interesting in relation to sharing learning practices. In the first workshop the participants created examples of various smaller learning activities (e.g. lasting an hour), whereas the participants in the second workshop tried to use the templates to describe more overarching course designs (lasting for weeks). This also reflects an ongoing discussion within the COMBLE project about the granularity of learning practices, i.e. should learning practices be understood as whole course designs or smaller activities within a course, and what are the relations between different pedagogical approaches and then particular designs or sequences of activities?

This opens questions of whether such relations should be made more explicit (e.g in the template or in the selection of meta-data), but also it raises a question of whether it is possible, feasible or meaningful to expect a strong linkage between them. Sometimes there might be strong links, but other learning activities might not be strongly related to a particular approach. This opens a question of how we can then describe such possible connections between activities, courses and pedagogical approaches without necessarily forcing such relations? One option is to investigate whether the Didactic Process Map Language and the Methopedia Learning Design Planner (M-LD Planner), which are two tools we shall return to, might help practitioners become more aware of these connections. Returning to the templates and the suggested way of describing activities the first workshop indicated that the template seems appropriate for describing learning activities. However, as earlier mentioned the second workshop revealed that the template might be less useful to describe course designs. Solutions to some of these issues might be to develop templates which are more aimed at describing course designs, but also to assess whether the Didactic Process Map Language and the Methopedia Learning Design Planner (M-LD Planner) can be useful at the level of 'learning designs' (also it is possible to attach IMS-LD or LAMS packages to a template along with a short description). In any case, it seems apparent that more research and design workshops should be initiated in order to address these issues. Therefore, for the purpose of this paper, we focus more on exploring the description of singular and sequences of learning activities.

A final outcome of the workshops was that we uncovered a tension between the intention of sharing across countries, and the need for practitioners to share and describe learning activities in their own language. In this regard the workshops also indicated that a more visual approach could be a solution.

In the following we describe how the challenges described have been, or will be, addressed and how they have affected the design of Methopedia. Thereafter, we return to describe how we aim to develop the community, and what the next steps will be in further developing Methopedia though workshops and user driven innovation.

2. Metadata: Taxonomy & Tags

Since there are hundreds of learning activities and dozens of learning approaches we considered different forms of enrichment of the Methopedia content to ensure search effectiveness for different categories such as: group work, subject matter or institutional backgrounds (Baumgartner 2006). The full text search helps to get an overview of applicable learning activities and approaches, but it might not be sufficient for specific needs. As a first step we therefore interviewed educators and asked about the most relevant metadata for them. Furthermore, in choosing suitable metadata categories, we had to keep the balance between exact content description and usability. Anticipating the need for more metadata in the future, we created a flexible taxonomy which is changeable by the administrators of Methopedia. In order to get feedback from educators for changing the taxonomy, we have implemented a tagging system, where every educator is free to enter the terms they find relevant.

Figure 4: Current Methopedia Metadata
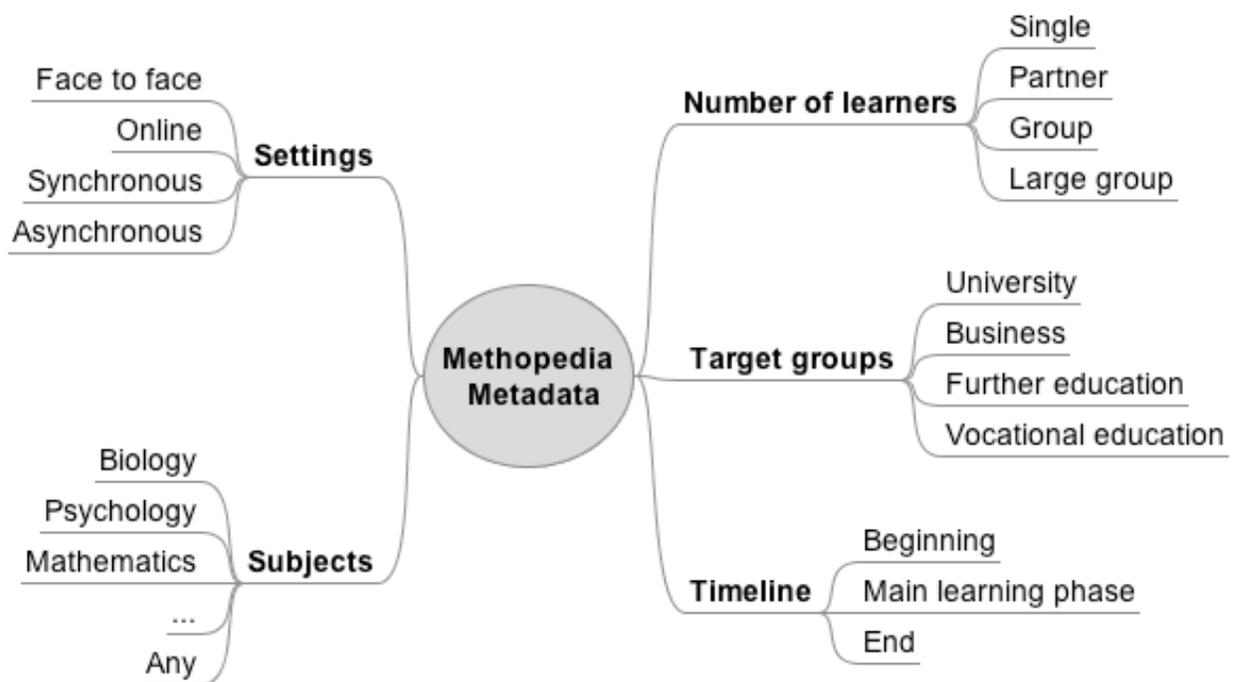
3. Localisation and multiple languages

As we realised through the workshops, there was a need to be able to share learning practices in one's own language. In relation to this we have to distinguish between menu and content language. MoinMoin as the base for the Methopedia wiki offers a so called "wiki farm" (http://en.wikipedia.org/wiki/Wiki_farm). It is thus possible to

create instances of a wiki for every language, which are reachable by sub-domains (e.g. pl.methopedia.org or de.methopedia.org). Concerning the menus, the automatic menu language change is very convenient, because it reads the browser properties. In this way educators in Poland, for example, will automatically see the menus in Polish. Direct translation of the content between the wiki farm instances however is not possible so far, which can potentially hinder the sharing of learning activities across different language communities. One possibility of solving this problem is the visualisation of the learning practices based on the already mentioned Didactic Process Map Language.

4. Describing and Visualising Learning Activities and Learning Designs

The attempt to connect educators from different countries raises the question: How to exchange knowledge without the restriction of language? As we learned in our workshops, a visual description can help educators to discuss and reflect about learning designs and activities in relation to creating and understanding the details of the process. An interesting perspective on learning activities is collaboration scripts. "A collaboration script" (O'Donnell & Dansereau 1992) is a set of instructions regarding to how group members should interact, how they should collaborate and how they should solve a problem. When a teacher engages students in collaborative learning, he or she usually provides them with global instructions such as "do this task in groups of three". These instructions usually come with implicit expectations with respect to the way students should work together. The teacher's way of grading collaborative work strengthens this implicit contract. A script is a more detailed and more explicit pedagogical contract between the teacher and the group of students regarding to their mode of collaboration (Dillenbourg 2002). Based on the idea of collaboration scripts, Notari and Honegger (2007) have developed the Didactic Process Map Language (DPM) as a small set of symbols to describe learning activities.
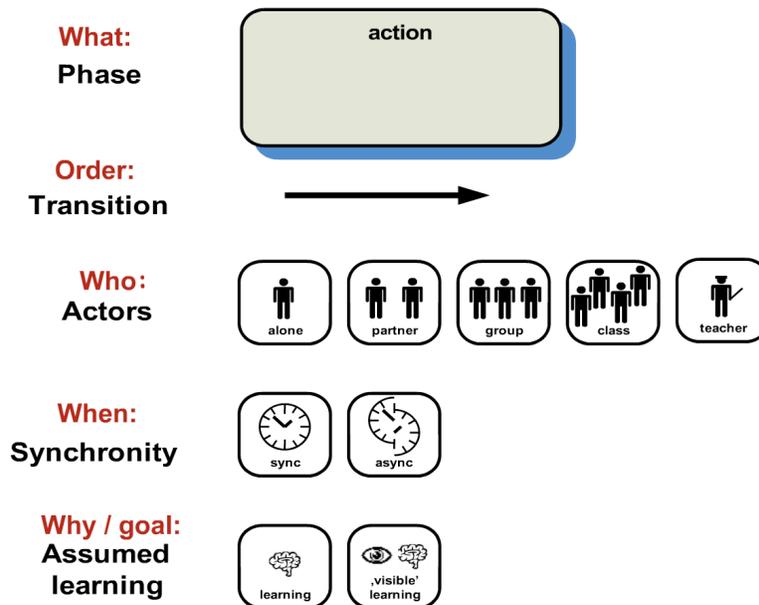
Figure 5: Didactic Process Map Language (Honegger, B., Notari, M. 2009, slide 9)
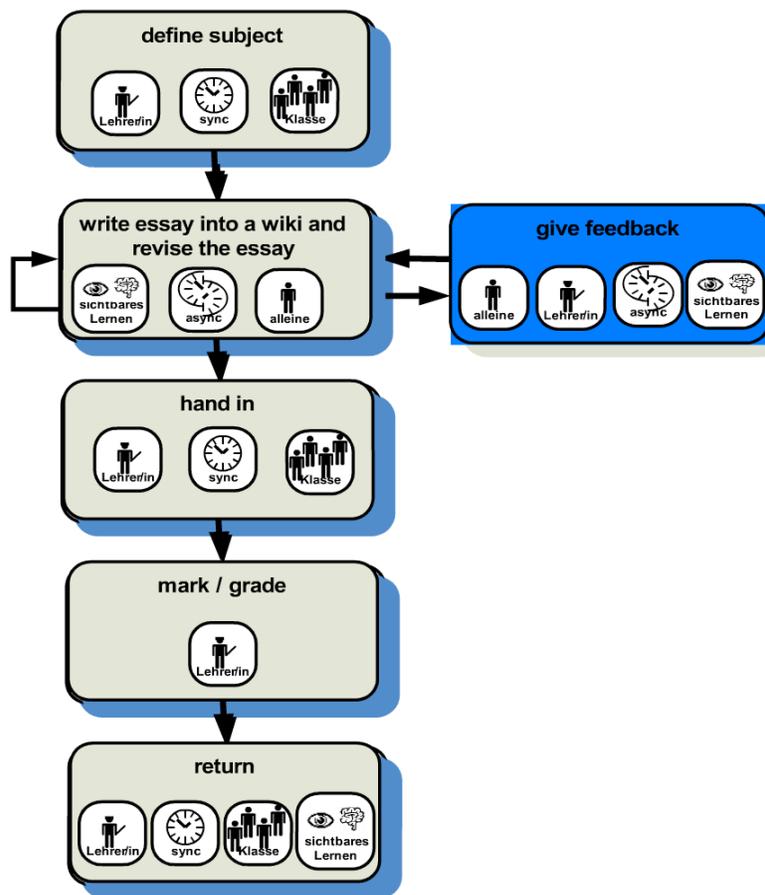
Figure 6: Process description with DPM (Honegger, B., Notari, M. 2009, slide 10)

We believe that a web based implementation of DPM in Methopedia would be an enrichment for the learning activities descriptions and help to exchange detailed knowledge with less language barriers. Therefore an interactive version is currently under development. Another functionality embedded into Methopedia is the interactive Methopedia Learning Design Planner (M-LD Planner) which assists practitioners in creating a seminar or workshop design using existing learning activities within Methopedia.
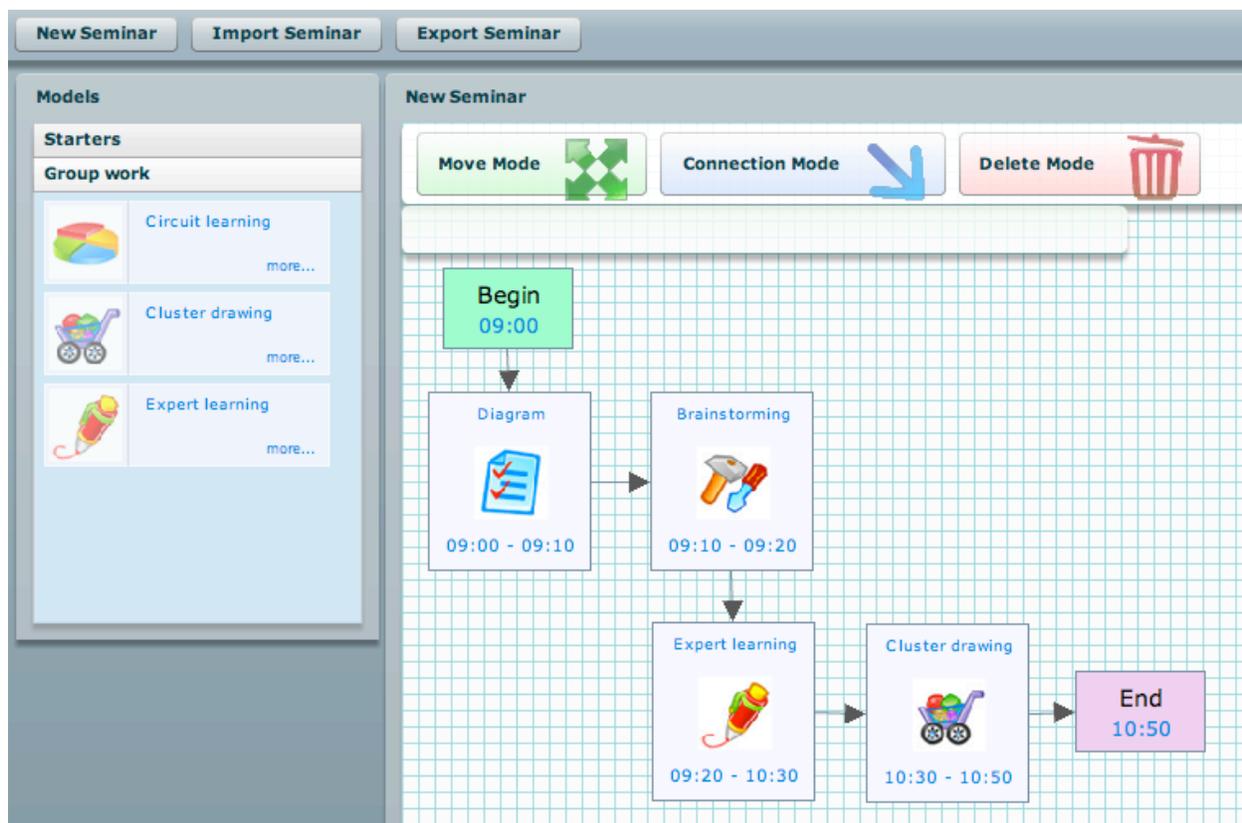
Figure 7: Workshop design in Methopedia Learning Design Planer (M-LD Planer)

With this web based tool, trainers and educators will be able to create and document pedagogical designs. This tool might also be valuable in connecting sequences of learning activities more intimately with particular pedagogical approaches, as also suggested by the notion of 'collaboration scripts' and the 'assumed learning' (goals) of DPM.

Another way of describing and documenting pedagogical designs is 'design patterns' which are equally interesting in relation to the development of Methopedia and the descriptive templates. This approach will be explored through pattern design workshops where we will invite practitioners to share their problems and solutions in order to create patterns. Apart from exploring design patterns the purpose of the workshops will also be to engage practitioners and initiate community development.

5. Workshop based community development

The success and the benefit of Methopedia depend on the activity of the community members. This will be reflected in the number and quality of shared learning activities and approaches, the frequency and intensity of visits, as well as the creative application of the knowledge in seminars and workshops. How does such a community develop and how can we support this process as moderators and developers? First of all, Methopedia is a Community of Practice, more precisely a Community of Interest (CoI). Arthur Armstrong and John Hagel III (2000) define CoI, as follows: they *"... bring together participants who interact extensively about specific topics of interest ... their transaction is generally focused on a specific topic area"* (p. 85). A general development-model of online communities describes five phases (Moisseeva et al. 2002):

- Phase 1: Pre-Implementation

- Phase 2: Implementation - activate interested people
- Phase 3: Establishment of the participation
- Phase 4: Continuous development and loyalty
- Phase 5: Sustainability (possible value creation for community members)

The Methopedia community development is currently in Phase 2, and workshops are a suitable method to activate potential users. There are three reasons for conducting workshops: it is important to know each other and to build trust. Secondly, it is a way to identify motivated early adopters in order to create a core team and also to define existing problems as a starting point for the work. The pattern approach will serve as a basic model for the design of the workshops.
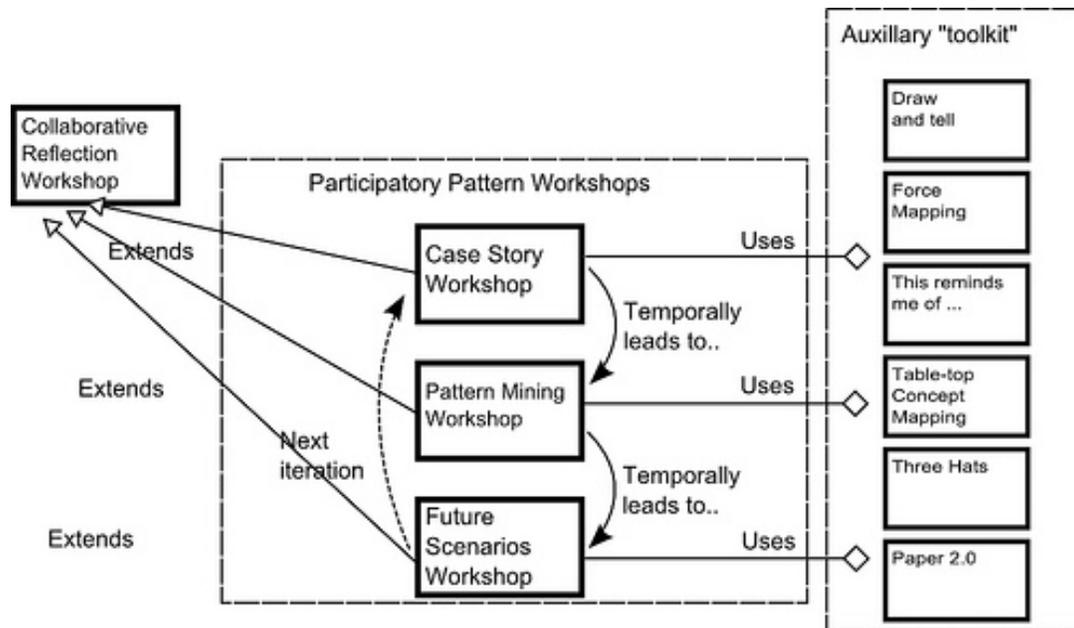
5.1 Design patterns

Design patterns are a way of documenting proven solutions to reoccurring problems. Expert knowledge is externalized by capturing core elements of the problem and the solution, enriched with the description of context factors and specific requirements.

A pattern is more than rules, or an algorithm, or heuristics (Alexander 1979). When a highly skilled person confronts an issue within his or her domain, he or she is able to quickly assess the situation: what is happening, what skills are needed, how is this similar to other situations, what needs to be done. The job of documenting and transferring expertise or skills is not just to describe step-by-step procedures, although that is part of the job, it is also to place the procedures in the same context that the expert uses. A pattern thus puts the rules in context, so that knowledge or skills can be more effectively transferred. It should be sufficiently descriptive so that the reader can apply it to different situations (Weisburgh 2004).

Mitchell Weisburgh (2004) has identified nine aspects for describing a pattern:

1. Name – single word or short phrase that refers to the pattern.
2. Problem – definition of a problem, including its intent or a desired outcome, and symptoms that would indicate that this problem exists.
3. Context – preconditions which must exist in order for that problem to occur; this is often a situation.
4. Forces – description of forces or constraints and how they interact. Some of the forces may be contradictory. For example: being thorough often conflicts with time or money constraints.
5. Solution – instructions, possibly including variants. The solution may include pictures, diagrams, prose, or other media.
6. Examples – sample applications and solutions, analogies, visual examples
7. Resulting Context – result after the pattern has been applied, including postconditions and side effects.
8. Rationale – the thought processes that would go into selecting this pattern. The rationale includes an explanation of why this pattern works, how forces and constraints are resolved to construct a desired outcome.
9. Related Patterns – differences and relationships with other patterns, possibly predecessors, antecedents, or alternatives that solve similar problems.

Patterns represent an approach to document how experts approach problems or opportunities in their fields in a way that allows others to emulate their thought processes, approaches, and solutions. Is has been shown that the use of design patterns can increase the efficiency of design and the implementation of solutions by allowing the expert to re-use components to accommodate new requirements in a more flexible way. Kolfschoten et al. (2009) have found in their studies based on cognitive load theory that the advantage of design patterns go beyond reuse, design efficiency and flexibility. Design patterns offer information in a way that enables the creation of better linkages between knowledge elements and improve the accessibility of the information in memory, providing specific added value for novices in acquiring design skills and domain knowledge.

Figure 8: Planet participatory patterns workshops (PPW) map (Mor 2009)

5.2 Design patterns and learning activities & approaches

Learning activities and approaches within Methopedia can be seen as documented solutions for existing learning and development problems, e.g. in an employment context. The aim of the workshops is not to invent new solutions but to be aware of already existing ones (Niegemann, Domagk & Hessel, 2004). As we mentioned there are a lot of learning activity collections for different learning designs. But educators have to understand what the problem is in order be motivated to search for and apply alternative solutions. In a Methopedia pedagogical pattern workshop, participants will be asked to brainstorm a list of learning design problems. The participants then work in small groups on discussing and describing various methodological solutions to these problems depending on contexts and other influencing factors. Participants will then be asked to describe learning activities or approaches using a picture language and also provide metadata information. The patterns will then be entered into Methopedia for re-use and refinement by other practitioners.

6. Next Steps

Technically it is already possible to embed videos in Methopedia. But the next step of integrating more visual content is to record movies about learning activities in action, e.g. within a classroom training, to make other pedagogical approaches more understandable.

In order to develop and promote the Methopedia community we will arrange regular workshops with trainers and educators to get face to face feedback for the development and the workshop design. Besides supporting the community we will also implement technological improvements. As mentioned above the web based implementation of the Didactic Process Map Language (DPM) is under development. Furthermore, we would like to connect to existing networks (like Eduspaces: www.eduspaces.net or XING: www.xing.com) by developing a common registration page with the option to name already existing memberships in other networks. This way it will be possible to contact persons, who edited the content in Methopedia - even if they are listed in other networks.

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