

# Positioning and Navigation: Services for Open Educational Practices

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# Positioning and Navigation: Services for Open Educational Practices

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**Key words:** *positioning, navigation, open educational resources, learning networks*

## **Abstract:**

*To choose suited resources for personal competence development in the vast amount of open educational resources is a hard task for a learner. This contribution introduces positioning and navigation as services that support learners in finding suited learning activities and resources for learning.*

## **1 Current Situation and Context**

Although the availability of open educational resources is increasing there is a lack between these resources and the educational use of the available material. The increase of open access does not imply the creative use of these resources for learning. Furthermore these distributed resources are not only used in traditional learning institutions but they are also used by distributed self-directed learners who use these resources in a more informal way. In the European Integrated Project TENCompetence we are currently researching ways to personalize distributed learning resources, units of learning and competence development programs in learning networks (1). Two services are responsible to offer individualized competence development programs in learning networks. The positioning service analyzes the prior learning of learners through a content analysis method while the navigation service recommends the next best learning activity for a student. In this contribution we introduce these services and discuss their potential as a bridge from distributed open educational resources to open educational practices.

## **2 Bridging Services**

### **2.1 Positioning**

The position of a learner in a learning network is determined by his prior knowledge in relation to learning activities and the resources used in these activities. Traditionally this problem is addressed through a process called Accreditation of Prior Learning (APL). In this process domain experts study documents that have been submitted by learners who apply for exemptions for a study program (2). The result of this process is an individualized curriculum where redundant activities have been exempted. In the learning networks context we are researching methods and tools to support this process for Technology Enhanced Learning. The positioning service helps a learner to find a starting position inside a learning network. To deliver these results we conducted a background research and formulated a research agenda for solving this problem depending on the given data which are available in the learning network (3). The current positioning service uses Latent Semantic Analysis (LSA) to calculate the prior knowledge of students for learning activities based on documents in their portfolio

and the connected learning resources (4). A high correlation between documents in the portfolio and learning resources leads to an exemption of this specific learning activity. This positioning service can also be used to inform learners about an individual “interestingness factor” for open educational resources. A high correlation between these resources and his portfolio will show that the learner already knows most of the concepts represented in these resources while a very low correlation would mean that these resources are completely out of the learners’ context. While the positioning service only uses data from individual learners the navigation service takes into account the behaviour of a group of similar learners.

## **2.2 Navigation**

The navigation service is a personal recommender system (PRS) for learning activities in learning networks. The general concept of the PRS for a learning network (LN) is in line with hybrid recommender systems in other domains. Hybrid recommender systems combine different kind of recommendation techniques to achieve a higher accuracy in their recommendation. Because every single recommendation technique has its own advantages and disadvantages, there is a need to combine techniques to increase the accuracy of recommendations. Using a combination of recommendation techniques is called a recommendation strategy (5). Recommendation strategies use domain specific or history information about users or items to decide which specific recommendation technique provides the highest accuracy for the current user. For PRS in lifelong learning context it is not possible to simply take or adjust an existing PRS for consumer products (like in amazon.com). PRS for lifelong learning should support the efficient use of available resources in a learning network to improve the educational provision, taking into account the specific characteristics of learning. PRS in LNs have to be driven by pedagogical rules, which could be part of the recommendation strategy. The recommendation strategy looks for available data to decide on which technique(s) to select for which situation. For OER a personal recommender system can take into account user behaviour in a social network to recommend best suited resources based on the items and the behaviour of the peer group of learners.

## **3 Discussion and Outlook**

The combination of prior knowledge analysis and a personal recommender system has a high potential to bridge the gap between the distributed resources and distributed self-directed learners who have the burden to choose suited learning activities and resources. Both services haven been recently analyzed in user studies and first results of these studies are promising. In the future both services will be implemented in the framework of the TENCompetence personal competence development infrastructure and its pilots.

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