OpenScout: Competence based management education with community-improved open educational resources

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Abstract: This contribution introduces the European funded OpenScout project. A basic infrastructure to find and reuse open educational resources (OER) in the field of business and management education is introduced. Based on a discussion of competence based education in the domain of business and management education some selected competence models are summarized. An example of a future user and evaluation group of the OpenScout platform is provided with the PLATO network. Two alternative methods to enrich learning resources with competence related information are discussed, namely purpose tagging and problem collections.

Introduction
There is an ever-growing need for management education and related content in all education segments and application fields. A large amount of open educational resources (OER) on management topics is already available in learning object repositories. However, even though there are obvious potentials, so far open content is significantly underused in the business sector, and particularly in SMEs where the need for lifelong learning is even greater. In studies on learning by managers, conducted in 2004 by the European Foundation for Management Development (EFMD), it has been identified that more than 85% of managers in SMEs would learn more using online reference material and learning resources, if the content is quickly found, accessed, available and meets exactly the identified competence development needs (Habermann, Schmidt, & Kuechler, 2004). However, there is still a variety of barriers regarding the re-use of OER (Pawlowski & Zimmermann, 2007), such as:

- Lack of awareness and competencies on OER re-use
- Insecurities about legal aspects and quality
- Lack of interoperable, easy-to-use repositories

The OpenScout project (http://www.openscout.net) aims at creating novel approaches to use and re-contextualization of OER by enabling stakeholders to use simple but powerful tools in their community. Its main aim is to stimulate the use and reuse of open educational resources in the field of business and management education in Europe. This paper introduces the aims, methodologies and first results of the project.

Basic infrastructure for Open Educational Resources
The OpenScout web portal provides a basic infrastructure for finding, annotating and evaluating open educational resources in the field of business and management education. The infrastructure integrates existing as well as novel services and tools to avoid redundant developments and to combine successful approaches. The architecture combines the following components:

- Basic services for search, retrieval, metadata handling
- Extended services for multi-national search, localization as well as competence-based services
- Tool library integrating successful tools for (re-)authoring, publishing, indexing
- Integration mechanisms to existing repositories as well as social networks
- Collaboration space enabling cross-border re-use and community-based improvement of OER

As a first step, the project has connected existing OER repositories in the domain Business and Management Education with the purpose to offer the content in a unified community portal. Content providers...
from different countries (UK, Finland, France, The Netherlands, Germany, Austria, Finland, Belgium and North Africa) contribute their business and management education learning resources to the project. To make these resources better accessible and visible a federated search approach is implemented that allows learners to find and identify resources in an easy to use and accessible interface. Federated search allows searching at the same time in several distributed repositories within the same search field.

In this approach all metadata of the learning objects from the original repositories are stored in the OpenScout environment. Federated search is a search solution that has been identified to work well in heterogeneous networks of learning object repositories with the advantage of low response times and low dependencies on the original repository infrastructure (Ternier et al. 2009). Most of the repositories involved offer an OAI-PMH interface to enable harvesting of the metadata describing the repository’s learning objects (OAI PMH). The metadata of the learning objects is represented using the OpenScout application profile which relies on the LOMv1.0 standard (IEEE LTSC, 2002). This federated search functionality is the core service of the OpenScout web portal (see fig. 1).

In addition, the portal is currently extended and several added-value services are under development. One example of additional functionalities are extended search mechanisms like faceted search which allows to filter search results according to the properties of the retrieved learning objects, e.g. content type, competences, language, and repository. The search results are presented together with basic information derived from the LOM description of each learning object. After selecting a learning object, the user is presented with a new container that holds document specific information according to general metadata (date, author, type etc.), social metadata (ratings, reviews, tags), as well as user competences and skills, see Fig. 2. Registered users can add their own ratings, tags and reviews. Competence models that serve as the foundation for competence related metadata can initially only be changed by authorized persons, such as content providers, domain experts or stakeholder representatives.
The user is also presented with recommended tools for working with this resource. These recommendations consist of default tools for visualization, authoring, and collaboration. Visualization tools allow the user to interpret, annotate, and translate resources. Authoring tools offer the ability to re-author, re-purpose, and re-package educational resources. Finally, the collaboration tools allow users to work collaboratively on educational material, such as videoconferencing tools. In addition, several connectors will enable the user to use the search results within external learning management systems and to use the content for e.g. in the composition and authoring of courses. One of the core foci of the project is the support and enabling of competence-based education with open educational resources in the domain of business and management education. This part and its related (search) services are introduced in the next part of the paper.

**Competence Based Business and Management Education**

Evidently, in a continuously changing society it has become impossible to manage and conduct business without sustained personal development. For example, managers of bigger organizations face the globalization of business, rapid technological change, continual reorganizing and competence-based competitions. Indeed, such developments challenge the skills, competencies, and capabilities of managers in organizations. Although SME’s managers might not be confronted with the same extent to such changes, they have similar challenges in keeping their personal development up to date. In the light of such changes, it is of paramount importance that managers’ competencies also need to be renewed on a regular basis. In practice, the responsibility for management development is often left to managers themselves. It therefore depends on their own perceptions and motivation as to which areas they intentionally seek to develop or whether they participate in various development processes (Viitala, 2005).

The expressed intent for developing frameworks of competence is usually to help individuals and/or organisations improve their performance (Boyatzis, 1982; Goleman, Boyatzis, & McKee, 2002; Hay Group, 2003; Conger and Ready, 2004). By making explicit the competences/skills that are required, or the outcomes that should be achieved, frameworks of competences have the opportunity to provide valuable support for all who are involved in recruitment, training, appraisal, promotion and self-development. Such frameworks can also facilitate greater flexibility in working practices and support systems of more equitable pay and renumeration. The most common use of such frameworks by organisations is for performance management/appraisal, followed by recruitment, followed by training and development (Rankin, 2008). Finally, such competence frameworks lie at the basis of technological frameworks like OpenScout proliferating and provisioning lifelong learning services for stakeholders in the domain of business and management education. Such technological frameworks require some system-based reasoning based on competence frameworks. These frameworks might, besides from competences, also incorporate or refer to cases, problems, and content. Competence frameworks for management education can guide the development of educational offerings and can make these offering better accessible. Such frameworks are developed by various stakeholders in the domain and need regular maintenance to keep them up to date. Various techniques are informing their development, such as domain analysis, job analysis, observation analysis, observations at work or in simulations or analysing critical incidents during business development (e.g., Man, Lau, & Chan, 2008). Furthermore managers are often questioned to induce and elicit their beliefs about competencies and effective role performance.

In spite of the variances in priorities and emphasis on different competences in different management contexts, it can be assumed that some degree of generalizability exists. Indeed, it is argued that many of the competences managers need are transferable and generic in nature, which subsequently for the basis for all organized management development (Mumford et al., 2000).

Educational offerings in management education should not be restricted to tangible (electronic) artefacts (whether or not produced in social networks), but should be extended with opportunities to get in (virtual) touch with representatives of aforementioned social networks. Indeed, skills and knowledge of the SME’s managers/owners are largely acquired through their social relationship within and outside their organizations, which is extended beyond the SME and towards a broader spectrum including suppliers, customers, bank managers, previous companies, university education, professional membership, parents, and mentors (Deakins and Freel, 1998; Down, 1999; Sullivan, 2000).

Albanese (1989) concludes from extended research amongst different stakeholders (experts, teachers, trainers, students) in the domain of management and CBME (Competency Based Management Education) in the US that:

- It is possible to identify a set of competencies and it is desirable to do so
- Managers and potential managers can be trained to acquire and perfect managerial competencies (although there is some concern where the training should occur (on job sites or in classroom), who

**Figure 2. Presentation of the metadata and tools associated with a learning object**

...
should do it (industry trainers or college professors), who should receive it (employees, undergraduates or graduate students) and which competencies are most likely to benefit from training.

- Competent managers make a difference in the level of organisational performance.

This research by Albanese also clarified that no one advocates eliminating cognitive learning, but there was and is a call for more balance between cognitive learning and skill training. CBME allows for the measurement of identifiable competencies. This offers a way a college, university, training institute can demonstrate its accountability. But more than that, it is a reflection of faculty and student receptiveness to the idea that it is not enough to know about management but it is also important to devote time to learning how to manage.

Albanese (1989) mentions several sets of managerial competencies that are currently discussed. The developers of these competency sets (i.e., competence frameworks) do not claim their competencies are the “final word” on the skills needed for managerial effectiveness. They contend that no single set of competencies can fully capture the mystery of the managerial role. And, of course, there are many job-specific skills that influence effectiveness in particular managerial jobs. To get an overview of the discussion about competences and competence based education in the field of business and management education we have conducted a literature review that took into account several publications in the last 10 years that could be identified via a literature search in Google Scholar, Ebscohost and other databases. Although different, such frameworks could be used as a starting point for developing an univocal framework for management education throughout Europe or for identification of mechanisms (i.e., mappings) that could be exploited when interpreting and exchanging educational offerings between various frameworks for management education throughout Europe. Indeed, this is a huge challenge, but at the same time there is an urgent need for system based-reasoning and optimizing labour mobility in the domain of management. Nonetheless, the starting point for implementing a first version of the competence based search will take one of the models presented here as a basis and adapt it to the needs of the stakeholders of the project which are business schools and SMEs:

- Whetten and Cameron (1984) place their approach to Competency Based Management Education (CBME) in the context of three pedagogical traditions that dominate management education: principles of management (i.e, focus on knowledge acquisition, little to no skills training), behavioural science (assumes that rigorous thinking about behavioural issues and experience in analysing and conducting behavioural research will help make students better managers, again: little emphasis on skills training) and experiential learning (e.g., Kolb, 1984), with focus on developing self awareness and behavioural skills (Whetten & Cameron, 1984). However, such exercises and discussions often took place in a theoretical vacuum. Whetten and Cameron recognize the value of all three pedagogical traditions and integrate them into their skill training approach (five step learning approach: skill pre-assessment, skill learning, skill analysis, skill practice, skill application). This learning approach is followed for each of their set of nine skills: (1) developing self-awareness, (2) managing personal stress, (3) solving problems creatively, (4) establishing supportive communication, (5) gaining power and influence, (6) improving employee performance through motivation, (7) delegating and decision making, (8) managing conflict, and (9) conducting effective group meetings.

- AMA/McBer (American Management Association) views the set of managerial competencies as a system in which single parts are viewed in relation to the other parts (Albanese, 1989). Similarly, the AMA/McBer model reflects the view that a manager’s competence can be understood only if each of the competencies is examined in the context of the entire set. For this purpose the model proposes five clusters of competencies:
  a. Goal and Action Management Cluster
     - Efficiency Orientation, Proactivity, Diagnostic Use of Concepts, Concern with Impact
  b. Leadership Cluster
     - Self-confidence, use of oral presentations, logical thought, conceptualisation
  c. Human Resource Management Cluster
     - use of socialised power, positive reward, managing group process, accurate self-assessment
  d. Directing Subordinates Cluster
     - developing others, use of unilateral power, spontaneity
  e. Focus on Others Cluster
     - self control, perceptual objectivity, stamina and adaptability, concern with close relationships

- According to Viitala (2005), competence and skills are used interchangeably in the relevant literature. Furthermore, there exists considerable doubt whether competencies can be extensively categorized and
labeled as they often overlap, and thus commonly suffer from ambiguity (Viitala, 2005). Six clusters of managerial competencies could be established by Viitala when integrating elements from different competency models introduced in the literature (Klagge, 1998; Mumford et al., 2000; Katz, 1974; Pavett and Lau, 1983; Hogan & Warrenfeltz, 2003; Conger, 2001; Carrington, 1994). This integration ended up in a competence pyramid. This pyramid consists of competencies, starting from tip (most visible) to base (least visible):

f. Technical competencies

g. Business competencies

h. Knowledge management competencies

i. Leadership competencies

j. Social competencies

k. Intrapersonal competencies

The PRO-NET 2000 initiative is sponsored by the US Department of Education and identifies management competencies (for managing adult education programs) which reflect seven broadly defined categories:

a. Leadership skills

b. Instructional leadership

c. Resource management and allocation

d. Staff supervision

e. Program monitoring and reporting

f. Professional development practices

g. Community collaboration

Performance indicators operationally define each competence. These performance indicators identify skills, behaviours, or practices that demonstrate the existence of the competence (‘ evidence’, not necessarily a formal document) (see e.g., Sherman et al., 2002). The project has developed a Management Competencies Assessment Instrument (MCAI) with 4 competence levels.

The here presented models are the foundation for the development of an initial top down competence model that will be used to allow users to find learning resources related to competences. These models are currently discussed with stakeholders of the project (business schools and SMEs) and an initial agreed competence model for the domain and learning resources is in development. These discussions already showed that the two main stakeholders groups have different requirements for competence based search for learning resources. While most business school are able to search and express their need for learning resources based on competence descriptions the SMEs need alternative approaches for competence based search. One of the stakeholder partners supports a network of SMEs in Belgium with consulting and training. This case will be shortly introduced next.

### PLATO: The stakeholder perspective

The PLATOTM idea and methodology is a program invented by SPK and focuses on the development of SME’s by a unique partnership with large companies and a network learning strategy. The process is centered on several groups of SME’s running in parallel and comprising 10 to 15 SME participating owner/managers and different volunteer facilitators (coaches) from large (multinational) companies. Each group meets once a month over a two-year period to address a wide range of management issues and to consult, learn, network and “grow” with each other. Invited guest speakers provide specialist support and technical information. SME owner/managers have an excellent opportunity to share experiences and learn from one another, have access to advice and assistance from specialists in large companies and broaden their views through invited speakers and by participating actively during the monthly sessions.

Based on the experience from PLATOTM-projects one can confirm that existing open content (OER) is underused within the SME business sector. The SME’s that have been enrolled in previous PLATOTM-projects – app. 1200 SME’s for the Kempen area in Belgium - do communicate with each other and exchange management information on a limited basis. The management content that invited guest speakers provide is not enough to solve the problems that SME owners encounter in their day-to-day business environment. Although SME businesses differ in terms of sector/market and in terms of maturity, it is usually the same set of problems or problem-areas that are recurrent.

Based on an analysis of problems of these SMEs mentioned in consulting interviews in recent years we have developed an initial problem collection for SME stakeholders in OpenScout. Looking into the initial list of problems one can cluster these problems into 6 main groups: strategic issues, commercial problems, innovation, financial issues, leadership and HR problems and finally continuity and succession. I.e. most SME owners
Problems and purpose tags as mediators for competence descriptions
While we have described above the top down perspective of competence services we are aiming at providing additional bottom up services for competence related information. While the competence models will be designed and updated by domain experts the OpenScout environment will also offer different possibilities for end-users to use alternative methods for finding and enriching content with competence related information. Here we have decided to offer two alternative solutions: Purpose tags and a problem collection.

User tagging has been one of the participatory functionalities that have been introduced through social software applications and specifically social bookmarking tools like Delicious (free online service) or Scuttle (open source solution). Instead of using expert-controlled taxonomies or ontologies to classify digital objects like in traditional library approaches so called folksonomies are constructed by users of the resources (Shirky, 2003).

Mathes (2004) discusses several advantages and disadvantages of user tagging. Folksonomies offer different possibilities to browse content and with high user rates so called “desire lines” can emerge from the tagging behavior of the users (Merholz, 2004). Besides a general domain related tagging (What is a resource about?) that will be offered within the general infrastructure we will implement a so called purpose tagging (What do users do with the resource?) (Strohmaier, 2008) to add competence related information to the federated learning resources. This should offer alternative ways for end users to describe competences or skills that they see related to resources from the OpenScout platform.

Another option for end-users of the OpenScout platform and specifically for SMEs is the use of a problem collection. Many users, in particular in SMEs are not familiar with the concept of competences. Thus, competences are often not explicit or understandable for users – not all learners think in terms of competences or proficiency levels (as also many curricula do not yet state clear learning outcomes and competences). Additionally, competence based search is not familiar to users: Most users using search engines or repositories are used to search for contents, but not for competences. There is a lack of understanding how to describe a competence in a google-like search field. Last but not least, stakeholders such as SMEs use learning and training activities for a very pragmatic reason and short to medium time horizon: in order to solve problems! Therefore, it is necessary to search for the more familiar concept of problems to be solved.

The European Qualification Framework (EQF) definition can also be seen as a skill or ability to solve problems. Pawlowski et al. (2010) define competences as “[…] a collection of skills, abilities, and attitudes to solve a problem in a given context. […]. Generally, we need to describe

- Competences containing skills, abilities and attitudes at a certain level of complexity.
- Problems denoting situation in which competences are applied and
- Context in which the problem solving is performed.”

Based on those observations and experiences, an alternative approach is to relate competences, context and, in particular problems – users might be able to describe the problems to be solved better than underlying / necessary competences. Pawlowski et al. (2010) have described the following description of competences in relation to problems:

<table>
<thead>
<tr>
<th>Concept</th>
<th>Description</th>
<th>Sample Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competences</td>
<td>Description of competences /&amp; learning outcomes to perform a task</td>
<td>Type of competences, description, subject, level (proficiency level from EQF), complexity</td>
</tr>
<tr>
<td>Problem</td>
<td>Description of a problem in which a competence should be applied</td>
<td>Situation description, actors, type of tasks, expected outcomes</td>
</tr>
</tbody>
</table>
As an example, a company might search for the competence of “the ability to resolve conflicts in a global team in a small outsourcing software development project between Finland and Russia”. The pure content search would lead to a waste, unmanageable amount of results for “conflict management” or “global teams”. The competence search would be far too complex to be made explicit. Our divided approach would let the user search for

- Problem: resolving, communication problem
- Context: Global team, software development, Finland, Russia

Thus, the specification is reduced to the concrete area of application and value-creation. Via this description format, competences can be related to problems, enabling for example a combination of competence- and problem-based search.

Based on this concept, OpenScout has built an initial problem collection has been entered into a rating and commenting system and is currently in a review phase through the stakeholders. In this phase the SME managers can see if the problem collection which was constructed through a desk analysis of consulting talk protocols mirrors their real problems and they can rate, prioritize and comment the problems. In addition they have the opportunity to add new problems to the collection if some are missing. For this process the initial problem collection has been entered into a “social content management system” with features like rating, commenting and adding of content (see fig. 3).

![Figure 3. OpenScout problem collection](image)

By this approach, we enable new forms of search which are intuitive and valuable for users, instead of supporting complex competence-based search activities only. For stakeholders from business schools we are currently exploring how we can follow a similar approach based on cases which are an important format in the domain.

**Discussion, summary and outlook**

The OpenScout project is a novel activity in the field of business and management education since it connects formerly separated open learning resources from different distributed learning object repositories in the domain. One key implication is the transition of a content based paradigm towards competence based work. First of all, by using problem descriptions we directly address stakeholder needs and requirements: finding a solution for a problem and thus value creation in the business context. Secondly, we raise awareness on the concept of
competence-based education and training. Thirdly, we provide concrete mechanisms for searching and finding meaningful resources for the academic and business context.

In this contribution we have introduced the main aims and initial components of the OpenScout platform. We have discussed the initial federation infrastructure that allows end users to search and re-use open educational resources (OER) from the domain of business and management education. To extend this infrastructure with functionalities that allow users to find resources related to competences we have first summarized some recent publications about the topic of competence based management education. Then we have introduced some selected competence models for the domain. Based on the example of the PLATO network we have identified the need for alternative methods to add and find competence related information to learning content from the OpenScout platform. Finally we have proposed two different ways of offering alternative competence services to different stakeholder groups of the project, namely purpose tagging and problem collections. These different top-down and bottom-up methods to find and add competence-related information to learning content from the OpenScout platform will be evaluated in close cooperation with business schools and SME’s in the consortium.

References


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