

# An Educational Framework for Content Sharing

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**Abstract - Open Educational Resources (OER) did not show the positive impact many educators and politicians had expected. Instead of building up repositories organized just by content criteria the paper proposes a community platform (edu-sharing.net) supported by a search engine triggered by criteria taken from an educational taxonomy of teaching methods.**

**Index Terms: Open educational resources, Educational taxonomy, Educational pattern, Content sharing, Reusability.**

## 1. INTRODUCTION

The use of Open Educational Resources is still very disappointing. Together with Gert Kortemeyer we are posing the question: "Why do the vast majority of higher education venues still depend on expensive paper texts, while most of the world's knowledge is available for free online? Why do educators not embrace the plethora of open digital educational libraries and repositories?" [1]

We have analyzed different barriers to overcome for using OER. All of the problems are related to educational issues not to technical limitations [2]:

- (i) Educational requirements: Finding the right resource is a question of economy of scale. Teachers are not looking for educational material as such but for an object with many detailed educational characteristics. This desired list of qualities is linked with the "and" operator and is therefore limiting the search result with every additional property.
- (ii) Educational metadata: In spite of sophisticated federated search engines and well known huge content portals (e.g. [3]–[6]) we are still lacking a sound educational taxonomy which teachers use and understand. Learning Object Metadata (LOM) is not sophisticated enough to fulfil practical educational needs of teachers.
- (iii) Educational culture: The "not invented here" syndrome and the well-known problem that learning objects created for a limited

personal usage have to undergo still a long and cumbersome process to make them fool proof for every possible standard situations are two sides of the same coin and limiting the use of OER.

- (iv) Educational quality assurance: Who has the necessary qualification and authority? This is not only a question of competence but in a participatory community model also a question of regulatory procedure and power relations. What kind of agreed and fast procedure is to follow? The blind peer review as the traditional model of quality assurance in science is not only far too slow but also seems inadequate in an open community model of fine grained different needs and diverse interest/target groups committed to a variety of educational models and approaches.

With the edu-sharing network [7] we try to overcome these problems and limitations. This paper explains the rationale for our approach, the implementation so far and future plans.

## 2. THE IMPORTANCE OF A COMMUNITY PORTAL FOR TRUST BUILDING

We know that material that is offered via Internet only by real names – or worse – by nicknames is not sufficient for trust. Confidence building is a cumbersome process, which has to be regarded from two sides: from the motivation of the supplier of the resource and from the interests of the user of the resource.

Let us start with the motivation of the supplier of the resource: Lacking direct financial compensation in open content portals we have to look for different motivational reasons for passing on material that one has created or adapted.

The hope to get other material in exchange is generally soon disappointed. We know that in the Internet culture there is no symmetry between supply and needs. Anderson has convincingly shown that there is a "long tail" of supply [8], meaning that very few products generate the main income – or in our context – satisfy the majority of needs. From a financial viewpoint this speciality of the Internet economy makes perfectly sense. As for digital material there is almost no storage cost [9] so that every single buy of a product – even if it happens not

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very often – generates real revenue. It is therefore beneficial to provide all kind of dead articles or slow sellers.

But this strategy does not work in a pure exchange economy where money as general change agent is missing: In that case we need either a reciprocal match between needs and quality of the exchange object between supplier and client (which is very seldom the case) or we would need a non-financial neutral exchange mechanism. In community networks normally this non-financial exchange mechanism is reputation.

Where the objects are already available e.g. ready at hand and finished (like music files) there are no excessive additional costs except for uploading time and – if there is no flat rate – communication or connections costs. But the first option (finished for sharing) is generally for educational material not the case. Learning objects have not only to be described with metadata, but also to be supervised and explained in contextual details in order to get helpful for a broad public. This “last mileage” of this preparation work for dissemination produces high additional costs. Especially if one of the non-financial exchange values is reputation, there is a big barrier to pass on *material that has not incorporated this additional work*.

Different approaches have already been developed to overcome the mentioned problem:

- (i) A quality assurance procedure by the portal externalizes these additional costs and is only valuable if there are many committed participants working without money or if there are financial funds available. Another disadvantage of this approach is the vaporization of the individual reputational value as many different persons are working on the same objects.
- (ii) To prevent jumping on the bandwagon and just use material of other people without giving anything back the portal may set up rules to follow. For instance one has to deliver material or other services (giving feedback, evaluating material, writing reviews etc.) in order to get the right to download material. Mostly these kinds of regulations are restrictions and barriers to build up a portal community very fast. This is especially a draw-back for new initiatives as a critical minimum on member participation is necessary for a useful exchange and therefore for a functional content sharing network.

Another way to overcome this obstacle of additional disseminations costs and of the critical mass of participation is to build up trust

by getting to know someone personally. If I know someone personally – let us say a friend of mine or a colleague of my department – then there is a common understanding and mutual reliance built up over time. It is helpful but not necessary that we meet in person. We could provide confidence through different interactions like exchanging our views on a certain subject via emails, posting photographs or other personal material, visiting and commenting articles of our weblogs or using one of the different functions of social software incorporated into the portal, etc.

It is one very useful side effect of this approach that (still) small member participation is not an obstacle and has to overcome but is a helpful condition of its own for the trust building processes. Small is beautiful in this case: One personal acquaintance with whom I will share content regularly is more effective than a huge portal with millions of possible assets which I have to search, filter, sort out and try to use on my own without contextual experiences of the producer or developer.

### 3. SHARING NOT ONLY CONTENT BUT EDUCATIONAL CONCEPTS TOO

In principle we can distinguish two different approaches of providing and using OER: Repositories with educational content also known as Reusable Learning Objects (RLOs) [10]–[14] and open access to complete courses like the MIT initiative OpenCourseWare (OCW) or courses as (by-) product from some Massive Open Online Courses (MOOC) providers [15]–[19].

Both sharing strategies do have disadvantages: In order to maximize reusability of learning objects the material has to be free of context. This devaluates the content from the educational perspective as material for high quality teaching has to be adapted for specific circumstances like learning goals, previous knowledge of the learner, available other resources, time frame, personal learning style, teaching method etc. This means that learning objects have to be adapted in order to get integrated well into the planned course material, a problem we have reported and analyzed several times [2], [20]–[24].

The other way is to use complete courses that have already applied and integrated all the above-mentioned educational assumptions. But here we also have to face different challenges: Besides the problem that one has to give up to a certain degree his/her individual teaching style we also have to link and cross reference the content of one course to other courses or

modules, meaning that the problems of RLOs reappears at a higher curriculum level again.

The MIT with its long dated experience from their OpenCourseWare initiative which started already October 2002 has launched the MIT Core Concept Catalogue (MC3). MC3 is an academic data service to “manage and share information about the curricular topics, learning goals, and related content within and across disciplines and subjects” [25].

The aim of this relatively new service is to integrate different parts of content (courses) under educational premises: “Just publishing content is not enough. We must find simple and scalable ways to expose the underlying concepts, learning goals and their relationships so that educational content can be more easily aligned, aggregated and re-used across departmental and curricular boundaries.” [26]

#### 4. THE EDU-SHARING INITIATIVE AS A NEW AND ALTERNATIVE APPROACH

From our point of view even the very advanced MIT academic data service is limited in two ways:

- (i) MC3 is constrained to the MIT community and their published course content.
- (ii) MC3 is a service that works as an additional data layer that is not integrated into the educational content production.

What is necessary is a development tool, which combines the planning of the content sequences with the planning of the learning activities (= educational methods). Only the visible and therefore modifiable integration of content objects with educational scenarios objects will provide teachers with lesson-plans they can adapt and elaborate to meet their own specific needs.

In the edu-sharing.net initiative educational organizations and users have full control about their contents because the edu-sharing repositories are installed within the educational organization. The repositories can be connected to the edu-sharing network if the organization wants to allow content sharing with specific external persons or organizations.

Edu-sharing users perceive the repository as a network drive, which can be connected to their Windows Explorer or Mac Finder. This can be thought of as a kind of Dropbox [27] for education. User can drag and drop contents between local file folders and edu-sharing network folders or they can save content out of their authoring application to the network drive or they can insert edu-sharing content from the network drive within the current document (e.g. a Word file). Furthermore edu-sharing provides

a metadata editor and a powerful content search.

All content can be easily used within applications for learning such as Learning Management Systems (LMS) like Moodle [28] or other collaborative tools that can be used for learning (e.g. wiki) because the repositories are usually deeply integrated within the IT infrastructures of the organization. The main target is to reduce media breaks through cloud services even though people work in different organizations with different LMSes.

#### 5. FUTURE PLANS WITH EDU-SHARING

The next step is to build up a community portal between the distributed edu-sharing repositories and to add the possibility to share not only content but also tools and edu-patterns.

Our main thesis is: To improve the reusability of learning material we would need an editor for lesson plans where we can search and integrate content, tool, and educational patterns.

Quite a bit of work has already been invested to facilitate the design of digital lesson-plans. To support a wide range of different educational strategies the Open University of the Netherlands (OUNL) developed IMS Learning Design (LD) 2003 as a standard to describe the specifics of different pedagogical approaches for online learning [29], [30]. But this standard is very complex so that we are still lacking implementation on its most advanced level. The Learning Activity Management System (LAMS) – inspired by the ideas of LD – is a more practical approach. It creates digital lesson plans – collaborative learning activities – that can be run online with students and shared among teachers and between different learning management systems (LMS) as well. LAMS uses a visual authoring environment for creating learning paths as a sequence of different learning activities.

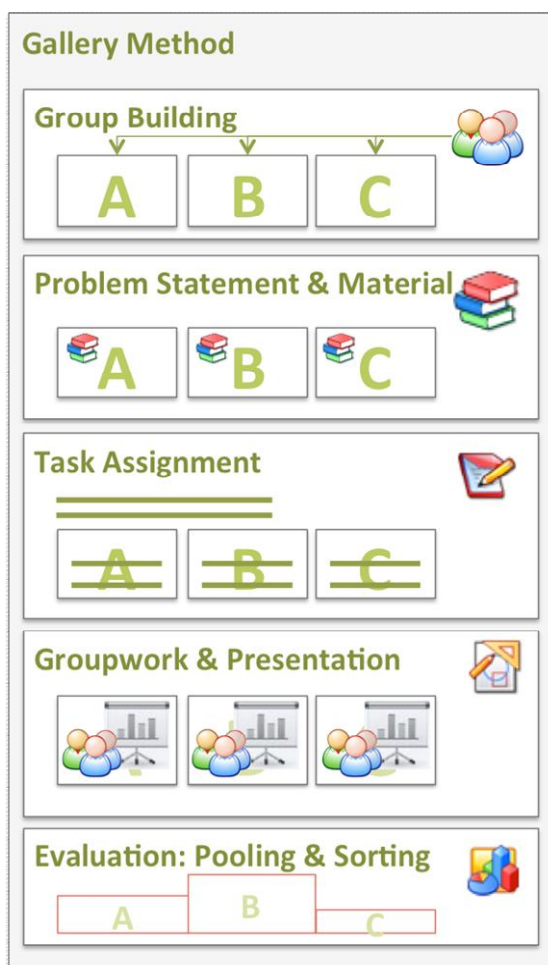
These are already some tools available for digital lesson planning [31]–[34]. But what is still lacking are editors which search for content, tools and educational patterns and are able to integrate these different ingredients to one lesson plan which is educational sound.

The following example with the “gallery method” [35] – a complex educational pattern and creativity technique – will demonstrate our plans for the first integrative steps: linking content with educational patterns:

In the traditional face-to-face situation the gallery method consists of five consecutive steps but these phases have to be conceptualized in eLearning in a complete different way. In real classroom settings group

building is a precondition for this method, which normally does not need an explanation, as anybody knows how to do it. As a consequence the concrete procedure in teaching guides is not explained even not mentioned as a separate step. In virtual scenarios however one has to put attention on group building processes because it is not easy to coordinate the necessary activities online. Special tools have to be provided to support this activity in virtual settings.

In the next implementation of edu-sharing developers of lesson plans (teachers) will have the possibility not only to search for content and tools but also for educational patterns. If they decide to use a special edu-pattern then they will be guided to the adequate tools for these special educational scenarios to facilitate the design of the whole learning situation. Edu-sharing will therefore bridge the gap between tools (= lower level activities) and educational pattern (= higher level activities). This is important as teachers are used from the face-to-face scenarios to think in higher-level activities.



Instead of just offering some educational pattern edu-sharing.net will implement a comprehensive educational taxonomy of

teaching methods drawn from a published book where they are discussed systematically [36]. They will be collected and presented as a pattern language [37], [38]. The idea of a special pattern description format has spread from architectural design to the design of object-oriented programs [39], [40], web design and human-computer interface design [41], [42] to other non-technical areas like educational design of teaching/learning scenarios [43]–[45]. Until now there is no systematic implementation of an educational pattern strategy in eLearning. Edu-sharing.net will be the first experiment in this direction. The future and a thorough evaluation of use cases will show if this approach is able to overcome some of the problems we reported in this paper.

## 6. SUMMARY AND CONCLUSION

We believe that the not very enthusiastic use of open content by teachers is partly caused by missing educational scenarios suitable for online lesson planning. It is not the content alone that generates a learning opportunity but a specified learning activity (e.g. teaching method) as well.

We therefore advocate special repositories where teacher can search not only for content but also for educational patterns to implement learning activities appropriately in their digital lesson plans. The presented network edu-sharing.net is a first step to integrate educational content with educational patterns to facilitate online learning.

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