

The value approach on microcontent and microlearning (Semantics for Microlearning)

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Abstract: Microcontents as learning resources are special in that they are created informally and have a subjective, personal orientation. This entails that the organizational *value* justification – considering costs and benefits – for microcontents differs from the notions of value associated to conventional learning resources as courses or modules, which were purposefully created or acquired from third parties. Outside the context of an organization, the value of microcontents can only be assessed through social filtering, be it relative to a concrete community of interest or relative to an open Web group. The concept of value in microcontents is important as a measurement instrument and also as a way to assess the actual contribution of microcontents to learning.

1. Introduction

We understand microlearning primarily as learning from microcontent¹ – from „*small pieces, loosely joined*“ (Weinberger 2002). Microcontents can be considered as a special kind of learning object, even though their typical usage scenario would be that of informal or *ad hoc* learning rather than planned conventional courses. These differences in the pedagogical approach of microlearning are of course important, but the economical paradigm is a second, relevant aspect that must be considered. Here we will deal with the economical specificities of a micro-learning object approach. By economical we mean relative to the justification of the paradigm with regards to cost-benefit in a broad sense. The following quote (Downes, 2001) clearly illustrates the essence of the economic justification of learning objects:

¹ As defined by Nova Spivack: http://novaspivack.typepad.com/nova_spivacks_weblog/2003/12/defining_microc.html (accessed Jun, 2005)

Now for the premise: the world does not need thousands of similar descriptions of sine wave functions available online. Rather, what the world needs is one, or maybe a dozen at most, descriptions of sine wave functions available online. The reasons are manifest. If some educational content, such as a description of sine wave functions, is available online, then it is available worldwide. Even if only one such piece of educational content were created, it could be accessed by each of the thousands of educational institutions teaching the same material. Moreover, educational content is not inexpensive to produce. Even a plain web page, authored by a mathematics professor, can cost hundreds of dollars. Include graphics and a little animation and the price is double. Add an interactive exercise and the price is quadrupled.

Such core idea can be applied in two contexts that deserve separate attention: (a) inside a given organization, and (b) when learning objects are considered as open access resources. In the former case, value propositions for learning objects can be stated in terms of the internal constructs (Lytras & Sicilia, 2005). In the latter case, inquiry is required in how existing mechanisms for trust and collaborative filtering can be scaled to microcontent production. This paper presents some ideas on both directions, aimed at provoking further discussion on justification models for reuse in microlearning. This paper takes a "Semantic Web" standpoint in that semantic metadata of some kind describing the microcontents is a requirement if an effective location and targeting of microcontents is to be achieved.

The rest of this paper first provides some reflections on the value of microcontent in organizational settings (Section 2), and then sketches the problem of assessing the value of microcontents for personal usage (Section 3). Conclusions and outlook are provided in Section 4.

2. The value of microcontents in organizational settings

Learning object value in the organizational setting is dependent on the value paradigm adopted (Cronk & Fitzgerald, 1999), which may vary from cost-benefit analysis or return of investment measures to more qualitative and multidimensional frameworks including concepts like utility, alignment with strategy, and organizational impact. In any case, those approaches would result in the linking of the effects of using learning objects

within the organizational framework. Then, the value of a learning object can be approached from two complementary perspectives (Lytras & Sicilia, 2005):

- The actual value “created” directly or indirectly by its use in learning activities inside the organization.
- The “potential” value of a learning object with regards to a given organizational need.

It should be noted that while the first aspect emphasizes a kind of post-hoc measuring or assessment process, the second one is actually centered on the adequacy of resources for the accomplishment of short or far-reaching organizational goals.

Should specific characteristics of microcontents be considered? The following is a list of issues that can be considered:

1. The **cost of creation or use of microcontents could in some cases be considered as zero**, since they are in most cases created informally. However, it is controversial if the planned creation of microcontent as just another business process could be easily adopted by organizations.
2. In any case, the cost of **creation of metadata to deal with microcontents and relate them to some organizational domains may be considered a cost item**², e.g. some specialized knowledge workers could do the job just as it is common to elaborate press summaries in many institutions. These knowledge workers would then be assessing tacitly the “potential” value of micro-contents, with regards to some conceptions of the organization’s objectives or needs.
3. Further, it is not enough to select microcontents, but to **target them to the profile and work activity of concrete employees**. This bears some resemblance to “knowledge gap analysis”, but in the case of microcontents is much more informal and of a much lower level “granularity”.
4. The **benefits of microcontents created outside the company are casual**, since their discovery is not planned or expected, but occurs as part of the information seeking tasks of employees.
5. The ways to measure the value actually created by a piece of microcontent require some **assessment of it carried out by the employee, and thus subjective**.

² At least in today’s state of practice, in which metadata is not provided for most microcontent items.

These and other issues suggest that an organizational consideration of micro-learning requires a micro-social model as that described by Hargadon (2002). Figure 1 depicts an sketch of the main elements of such view.

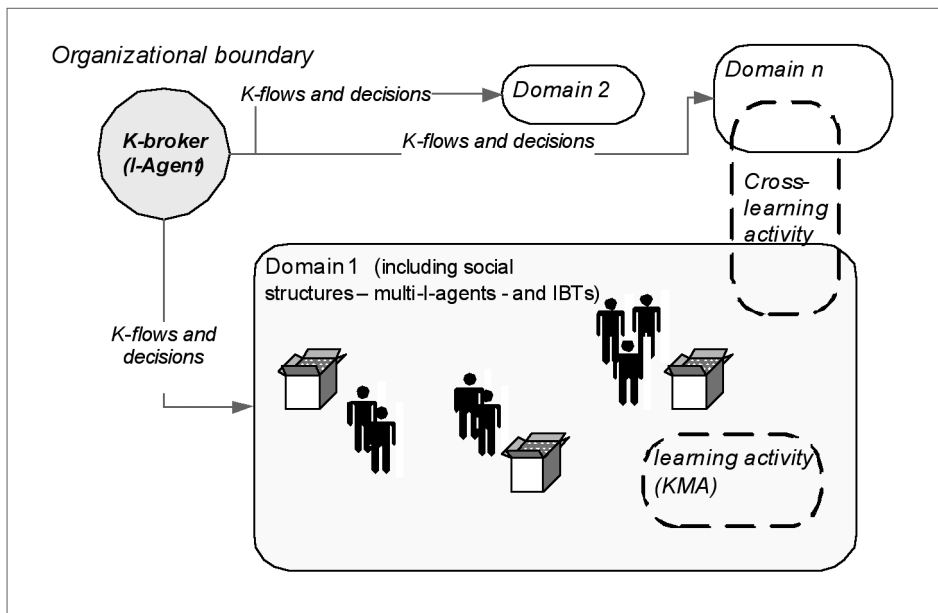


Figure 1. Overall view of Hargadon's elements

In Hargadon's view, the processes are considered in domains of interest inside the organization, and inside them, social networks are the main construct, and local learning activities occur. The concept of knowledge brokers as agents that disseminate knowledge across domains is required for cross-fertilization and eventual transfer of techniques and methods. Microlearning under such a model would be a domain-specific process, and the social network inside each domain would be the agency that selects, creates and targets microcontent locally. This in turn leads to a view of micro-content value tied to the values and objectives of each domain. For example, in the "quality" domain, microcontents useful for acquiring quality assurance techniques could be spontaneously catalogued by the interested people in the domain. Then, the value assessed – that can be expressed for example in terms of ratings – is locally determined, and has the capability of influencing the way the domain behaves. In fact,

this informal, social categorization of casual contents is a practice yet existent in many organizations, since it is embedded in the “portal culture”, in which some news and documents are put for the “general interest” and not as part of planned, pre-scheduled learning activities.

3. On the personal value of microcontents

Outside the organizational context, value becomes a matter of subjective value. A model of social networks of interest as the one sketched above for organizations could be used, but in this case, conflicts and divergence of interest may be more significant, which suggests other ways to assess value.

Of course a pure “collaborative filtering” approach based on ratings could be used (Konstan et al., 1997), but this by no means entails that ratings would indicate the quality of the microcontent. Such position will be flawed because of the inherent divergences of value for different people that are interested in different matters or have different objectives. In economic thinking, this is a consequence of the principle of explanatory value-subjectivism. This can be explained in the following terms³:

[...] *explanatory value-subjectivism*, which simply means that in explaining someone’s actions, you appeal to their evaluations, not yours – just as in explaining someone’s actions you appeal to their beliefs and not yours. If you see someone walking out on a bridge, and you know the bridge is unsafe and is likely to collapse, but they don’t know that, then in interpreting why they’re doing what they’re doing you shouldn’t attribute to them your belief that the bridge is unsafe if they don’t have that belief. If you try to explain their action by appealing to your belief that the bridge is unsafe, your explanation isn’t going to be any good. [...] So explanatory value-subjectivism doesn’t say anything one way or the other about whether there is such a thing as objective value; it just says that if you’re going to explain people’s actions, you explain them in terms of their desires, not yours.

Then, ratings can never be used to sanction the “quality” of a piece of open access microcontent – at least in an objective way. Nonetheless, the process of finding “simi-

3 Quoted from: Economics and Its Ethical Assumptions by Roderick T. Long, available at <http://www.mises.org/story/2103>

lar interests” in people – which is the objective of collaborative filtering – may still be useful. The problem is that for general Web users, it is not feasible, since it would need a database of ratings were users would be recognizable (even is they use nicks to preserve anonymity).

Peer reviews as in the MERLOT repository (Cafolla, 2002) is a good approach for “conventional” learning objects, but it does not scale for microcontents, which constitute a big volume of items.

The above discussion suggests that microcontent value is essentially subjective, so value assessment would be always considered subjective. A possible direction for exploration is that of social network analysis through exploring linking. These can be combined with algorithms as Google’s PageRank (García and Sicilia, 2005) to combine the tacit information in linking with the social approach of web sites as *LinkedIn* that have brought together millions of people that are willing to provide information on their contacts for the purpose of finding jobs, people and business opportunities.

4. Provocative thoughts

It seems that in the next years we will face a new era of “content” primer for learning. It seems that the formal or structured approaches to learning content will go beyond the “well defined” linking of “well defined” objects. In Lytras and Pouloudi (2006) this is expressed in the mode of “level of a-priori structure”. In the world of the distributed intelligence of the semantic web we have a key challenge to exploit the “unstructured” micro-contents as well as the “structured” microcenters. (*figure 2*)

5. Conclusions and outlook

This paper has discussed the concept of value of microcontents in the organizational and personal contexts. Some important open questions have been sketched, aimed at starting discussion and providing arguments to the microlearning approach.

This paper has attempted to provide an initial ground for discussing value approaches to micro-learning objects, but further work should deal with the comparison and details of different approaches to microcontent value.

Locus of Knowledge			
ARTIFACT	INDIVIDUAL	TEAM	ORGANIZATION
1. Documents Repository Data Warehousing	2. Yellow Pages of Experts Expertise Profiles & Databases	3. Work Flow Systems Collaborative Work Systems Project Deliverables Repository Team Profiles	4. Enterprise Application Integration Best Practices, FAQs Knowledge Maps Knowledge Brokers OLAP
5. Collaborative Filtering Intranets & Search Engine	6. Electronic Discussion Forums	7. Virtual Teams Group Ware Systems Chat/ Conferencing List Servers E-mail	8. Teleconference Intranets Extranets CRM Search Engines Data Mining Help Desk Applications
9. Learning Objects Base Learning Templates Base Metadata Mgmt system Learning Scenarios Builder	10. Semantics Competences Description Learning Expertise Profiles	11. Expert Systems for Personalization Lessons Learned FAQS	12. Profiling System Lessons Learned Programs FAQS Learning Infrastructure
13. Search Engine Keywords Extract	14. Annotations Needs Assessment Tool Motivation System Evaluation System	15. Role Playing Games Business Simulation Brainstorming	16. Benchmarking Business Intelligence

Figure 2. A knowledge management support framework from a learning perspective.
Source: Lytras and Pouloudi (2006)

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International Journal of Teaching and Case Studies, <http://www.inderscience.com/ijtc/>

AIS SIGSEMIS Bulletin, <http://www.sigsemis.org/newsletter>

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