



## Micro-E-Learning in Information Literacy

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### **Abstract:**

*The term "Microlearning" refers to the acquisition of a given information or learning material in small units that can be absorbed quickly. Microlearning denotes a shift of interest from formal, hierarchically organized ways of institutional teaching to the more direct and pragmatic ways in which people acquire knowledge in everyday life. In this presentation I want to introduce to you the idea of microlearning and describe how it fits the learning behaviour of "digital natives". Furthermore I want to show how the German National Library of Economics (ZBW) focuses on microlearning for the online teaching of information literacy by interconnecting the online reference service EconDesk and the modular online tutorial on information literacy, LOTSE.*

### **1 Introduction**

In a world of accelerating changes in technology, society, and working life, learning is a lifelong process and the intervals between information needs get shorter and shorter. It is not possible any more to visit courses on everything you need to learn, thus the amount of informal learning, learning that is not directed by institutions, increases. The constant access to information on the internet and the need of keeping up to date in a changing environment has led to a new learning behaviour. Informal learning today is usually e-learning on the internet in small units, from blogs, forums, websites, YouTube clips, or Facebook: microlearning. In this paper I want to introduce to you the idea of microlearning and describe how it fits the learning behaviour of "digital natives". Furthermore I want to show how the German National Library of Economics (ZBW)<sup>1</sup> focuses on microlearning for the online

<sup>1</sup> ZBW - German National Library of Economics: <http://www.zbw.eu/index-e.html>

teaching of information literacy by interconnecting the online reference service EconDesk<sup>2</sup> and the modular online tutorial on information literacy, LOTSE<sup>3</sup>.

## 2 What is Microlearning and why is it usually E-Learning?

Hug points out that "[i]t's not a well designed paradigm we have as a starting point - it's rather bits and pieces from different discourses and practices we are starting from" (Hug 2006: 8). However, one could state that the term "microlearning" refers to the acquisition of a given information or learning material in small units that can be absorbed quickly, and thus bring it to the lowest common denominator. Microlearning denotes a shift of interest from formal, hierarchically organized ways of institutional teaching to the more direct and pragmatic ways in which people acquire knowledge in everyday life.

In informal learning the significance of microlearning and micro-e-learning increases. As we all know, learning is a lifelong process and the accelerating invalidation of knowledge (Geißler, Kutscha 1992, quoted in Eibl 2007: [125]) and the faster changes in society, working life and technologies result in that:

1. the responsibility for keeping up-to-date is shifted more and more towards the learner; the direct control from institutions decreases and
2. the intervals between information needs get shorter and the learning units themselves must become smaller and smaller for people to be able to cope with the information and be able to have a reasonable alternation between learning and working / applying the information. (Eibl 2007: 126)

On the internet, and in connection with the handling of new electronic devices and software, microlearning (micro-e-learning) is the most common way learners deal with new information. They get in touch with a tool or a topic, encounter a problem and search for short and fast solutions or learning units directly within the medium (e.g. in forums, YouTube, blogs or websites), instead of attending lessons. Bruck says that:

"[m]icrolearning' has become the most common everyday practice in the information society. It's the way we breathe in information and exhale communication. We do it when reading and writing e-mails or mobile texts, blogs and wikis, or when we google and podcast, set up aggregations & feeds." (Bruck 2006: 7)

Eibl also highlights the direct link between microlearning and e-learning: "The concept of short-term education and the new digital communication media are merged, are blended together to enable step-by-step learning in short time slots, anywhere and anytime." (Eibl 2007: 128)

People tend to pick small information units to learn instead of reading whole books about their matter of interest. Furthermore, internet sources such as online chapters, blogs, forums etc., i.e. "e-learning material", have widely replaced printed books as the first source to be consulted. As Langreiter and Bolka say:

"[m]icrolearning as a term reflects the emerging reality of the ever-increasing fragmentation of both information sources and information units used for learning, especially in fast-moving areas which see rapid development and a constantly high degree of change." (Langreiter, Bolka 2006: 79)

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<sup>2</sup> EconDesk: <http://www.econdesk.de> (You can switch to English language on the top of the page - but on the German site you additionally find links to YouTube clips, marketing material etc.)

<sup>3</sup> LOTSE Economics and Business Studies: <http://lotse.uni-muenster.de/wirtschaftswissenschaften/index-de.php> (At the moment LOTSE is only available in German language)

On the web microlearning implies spontaneity, the active seeking for knowledge by the user, informal learning and the instant application of the knowledge or skills learned. The learners are highly motivated and strive for information themselves and for their personal gains, so the learning effect is particularly high.

Given this situation and the fact that according to the estimates of many studies informal learning approximately accounts for 70-80% of corporate learning (Cross 2007: [243]) — I would guess it is even more in private matters — one could say that e-learning is a mass phenomenon and is very successful.

But there is a catch and what Bruck says is very interesting to me, as it exactly expresses what I always thought about stand alone e-learning material on the web:

"...we have to confront the fact that there is a considerable difference between the ongoing learning with the new ICTs which is often termed as 'informal' and the organized learning formalized in courses.

While the informal learning works very well, the formal is not. This observation results a series of questions: Why has formal eLearning never lived up to its promise? Why do individual 'life long learners' as well as managers in 'learning organisations' still have massive problems keeping people motivated and courses effective?" (Bruck 2006: 8)

He suggests that formal e-learning platforms are too static, too quickly outdated and not adapting to individual needs of the single user. He states that they struggle with being too "macro" and that macro learning in e-learning contexts does not succeed. (ibid.)

Given the need for smaller information units and the increasing number of people learning informally and online, libraries should offer their learning material on information literacy in micro formats on the internet. They should ideally embed it into platforms frequented by users, and open it for search engines as well as use it in their formal courses on information literacy.

### **3 Who are our Learners? And why does Microlearning fit them well?**

Getting to know the learner and her / his learning behaviour and needs before developing courses or e-learning services is very important to ensure that the course or service will actually be visited / used and be able to teach the user in a way she / he can respond to. In academic libraries we teach adult learners, many of them digital natives who have never experienced a world without computers, internet, and mobile phones.

As far back as the 1970s Malcolm Knowles characterized adult learning behaviour as follows:

- Adults learn autonomously and self directed.
- They have different previous experiences. Learning contents must therefore be tailored to their individual previous knowledge.
- They learn goal-oriented, life-oriented and problem-oriented. (Knowles 1973)

Since the research and findings of Knowles, technological changes and inventions have taken place that led to a new learning behaviour, especially among the digital natives. The findings of Marc Prensky concerning the learning behaviour of young adults do not, in my opinion, contradict Knowles' findings but augment them in some ways.

He states that digital natives:

- ... are used to immediate access to information,
- they prefer games, graphics, multimedia based, and interactive learning,
- they prefer random access and want to decide for themselves in what way and at what pace to learn,

- they are learning self directed by trial and error instead of learning the theory first,
- they prefer to learn from colleagues, friends, movies, the internet, etc. rather than from lessons,
- they want to be creative in finding solutions instead of letting someone tell them exactly what to do,
- they want to be treated and taught as individuals. (Prensky 2001, Prensky 2010)

Prensky states that digital natives don't have shorter attention spans but that they have to face a constant attraction of games, movies, music, calls, etc., so they have to select very carefully what to pay their attention to. When they are personally interested in something they can stay focused over a long period of time. He further states that today's institutions don't manage to present their learning contents the way digital natives need it. (Prensky 2010: 2) He suggests that today's generation learns best with games, cell phones, YouTube, television, etc. and that we need to use the new technologies to reach out to them. (ibid.: 1-2)

But doesn't Prensky just shift the old forms of learning towards the new media? He states that we need to use the new technologies to reach out to our students and new generation of learners. But as we have seen and Bruck has noted, formal e-learning hasn't always lived up to its expectations. So I think we must bring together the two facets: On the one hand the new technologies and on the other hand the shorter units and the concept of microlearning.

The characteristics of microlearning are tailor made for the learning behaviour of digital natives. But this is no coincidence. The new technologies led to the changed learning behaviour of the digital natives; microlearning is based on the faster changes and the fragmentation of information that accompanies the new technologies. One could say that digital natives invented microlearning. And although Prensky says that digital natives stay concentrated over a long period of time; when learning in their own way, informally, they usually learn in micro units from different sources on the internet.

In summary, one could conclude that microlearning units should be accessible online, offer immediate access (ideally 24/7), be multimedia based, interactive, and / or peppered with graphics. Learners should find information directly on their personal topic of interest (random access) and in their own environments like Facebook, YouTube, search engines, blogs etc. where they have the chance of finding the information, even when they do not know the source of it.

#### **4 An Example for Micro-E-Learning in Libraries: Connecting the Online Reference Service EconDesk with LOTSE, a modular Online Tutorial on Information Literacy**

The German National Library of Economics (ZBW) offers two e-learning services to support the information literacy of its users. On the one hand there is the subject-specific online reference service EconDesk, which answers questions on highly specific topics and supports users with their information needs individually at their time of need via chat, e-mail or telephone. On the other hand the ZBW is responsible for the section economics and business studies of the cooperatively established and modular online tutorial LOTSE on information literacy. I want to introduce to you the idea of interconnecting the two services in order to merge the benefits each of them offers. I also want to explain why this serves users whose changed learning behaviour reflects the ubiquity of microlearning.

## 4.1 EconDesk — Online Reference in Economics and Business Studies

EconDesk (<http://www.econdesk.de>) is an online reference service in economics and business studies. Users are invited to ask subject-specific questions via e-mail, chat or telephone. Techniques of literature search are taught individually based on the given topic and questions on citing, evaluation of sources, the acquisition of literature, and much more are answered. Users who search for facts are guided through the appropriate factual database or the internet to the data required. As an additional service, EconDesk searches and delivers brief facts in economics and business studies. Search paths, search terms and databases relevant to the topic of the user are also described. In this way users' information literacy is improved in micro units step by step through examples of a topic of their interest.

One feature of EconDesk is that it is a subject-specific service, which provides answers tailored to the users' questions on economics and business studies. The ZBW counts several economics librarians among its staff and holds highly specific and comprehensive literature and databases. Thus it provides an ideal basis for subject-specific online reference work.

The subject librarians of the ZBW, who are experts in the acquisition and retrieval of economic literature in various specific fields, are integrated into the reference work of EconDesk and cooperate closely with the reference librarians, providing support concerning economic terminology and the search of particular data, if needed. Subject librarians also cross-read the answers to questions that require specialist knowledge before they are sent to the users to ensure the quality of the service.

The specialization on economics and business studies enables reference staff members to build on and enlarge a comprehensive knowledge of the available information resources, their contents and their handling. This know-how allows EconDesk to provide answers even to users who already have an advanced knowledge of their particular subject and to supply these answers quickly and efficiently. Users learn that a library is a competent partner for questions concerning the search of information.

## 4.2 The Online Tutorial LOTSE on Information Literacy

LOTSE (Library Online Tour and Self-Paced Education) (<http://lotse.uni-muenster.de>) is an online tutorial on information literacy initiated by the University and Regional Library Münster (Universitäts- und Landesbibliothek Münster)<sup>4</sup>. It contains information on all aspects of information literacy, such as:

- The search, access, and evaluation of information
- The writing of scientific papers, reference management, and citation
- How to keep up to date with RSS newsfeeds, social media, conferences, etc.
- Where to find institutions like research institutes, associations, foundations, libraries, etc. in your subject area, and
- How to search for facts like statistics, laws, definitions, biographies, etc.

Besides textual descriptions, LOTSE offers video tutorials and quizzes to support multimedia based and interactive learning.

The contents of LOTSE are generated cooperatively by 21 libraries from Germany, Austria, and Switzerland. LOTSE does not only contain general information on information literacy, but subject-specific contents related to 20 subjects. One of these subject-specific tutorials is

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<sup>4</sup> University and Regional Library Münster: <http://www.ulb.uni-muenster.de/> (Only available in German language.)

the economics and business studies tutorial edited by the ZBW. One very important aspect in connection with microlearning is that LOTSE has a modular structure. You can enter the tutorial at any point of your personal interest and only need to read and study the contents that are relevant to you at a particular moment.



Figure 1: Entry page of the online tutorial LOTSE on information literacy in economics and business studies

### 4.3 Combining EconDesk and LOTSE

EconDesk and LOTSE, although quite different services, were both designed to increase the information literacy of users. On the one hand, EconDesk offers more than the online tutorial LOTSE, which is available at all times but cannot be tailored to individual questions on highly specific topics. On the other hand, LOTSE can include much more information than a single chat, a telephone call or an e-mail. The effectiveness of these two services can therefore be increased by connecting them closely, so that all possible questions can be addressed and the user can be supplied with sufficient information to solve his / her information problem.

#### Example 1: The unknown level of information literacy

Soon after the establishment of EconDesk, reference librarians realized that it is very hard to estimate the user's level of information literacy. When a question is sent to EconDesk in which the user only asks for information on how to search for literature or facts on a certain topic, you cannot tell if she / he only needs to have the relevant databases and search terms suggested or whether she / he also needs instruction on handling factual or bibliographical databases, Boolean operators, truncation of terms and the evaluation of and access to sources etc. This especially pertains to e-mail questions which constitute the largest portion of

questions within EconDesk, because here you have only an asynchronous communication and cannot evaluate the existent knowledge of the user.

→ If the level of information literacy cannot be determined from the question received in EconDesk, relevant contents of LOTSE are always pointed out for further reading and studying. Since every single topic in LOTSE can be addressed by its own URL, EconDesk staff can pinpoint the content that is needed for a particular user, e.g. the use of Boolean operators, the truncation of terms, the ordering of literature from another library or the search for textbooks, etc. Users can decide for themselves if they need further reading before they start their search for literature or facts. They become familiar with LOTSE as a tool which answers general questions on information literacy and which also informs about topics that were not pointed out in the EconDesk answer.

### **Example 2: The need of keeping answers short and simple**

It is impossible to provide all potentially relevant material on information literacy through EconDesk in every single answer. Especially in phone calls or chats, where people are used to get information quickly, it is not possible to explain the search for and access to information in detail. But users are also frustrated if you send them too much and too complex information by e-mail.

→ If there is a correlating section in LOTSE, answers from EconDesk are kept as simple and short as possible regarding the individual information need. Relevant sections of LOTSE are pointed out in the reply e-mail.

### **Example 3: The wish for multimedia based learning material**

EconDesk cannot offer multimedia-based interactive or graphical learning material to users but only send text based answers to users. (Only during chats can websites be pushed to teach users interactively.)

→ To address the users wish for multimedia based and interactive contents for learning, relevant LOTSE video tutorials and quizzes are pointed out to users.

### **Example 4: The complexity of LOTSE**

The huge advantage of LOTSE, its comprehensiveness, can also be seen as a disadvantage. Users might get frustrated when being confronted with the amount of information (they prefer micro units). They might not know where to start and how to handle the tutorial efficiently. When people are confronted with the whole tutorial at once, LOTSE can be regarded as "too macro", as Bruck said.

→ The use of LOTSE can be much improved when users are directed to single micro units of LOTSE within answers of EconDesk.

### **Example 5: Naming a personal tutor in LOTSE**

LOTSE covers all aspects of information literacy, it is very comprehensive and available at any time. Users can use LOTSE either as a reference work in which to look up information on a certain topic of interest or as a tutorial in which to learn how to search, access, evaluate and use information. However, LOTSE cannot be tailored to individual questions on highly specific topics. It is also possible that users do not understand the contents of LOTSE, have questions concerning the handling of the website or want to ask other questions.

→ It is very important to offer personal contact regarding LOTSE and the acquisition of information literacy, as a personal tutor is regarded as elementary in e-learning. This connection was realized through links to EconDesk that are placed on every single site of the economics und business studies section of LOTSE. Users are invited to turn to EconDesk personally with any question concerning information search and are directed to the EconDesk site where they can decide whether they prefer to call, chat or send an e-mail to EconDesk.

In this way users are taught individually but can learn self directed and at their own pace. They have access to micro units on information literacy either 24/7 online or — when using EconDesk — receive information via chat, e-mail or telephone very quickly. They have random access to the contents and don't have to sift through contents they do not need at that moment. They learn on the internet interactively (e.g. by applying the information instantly) and multimedia based. As you will see in the following they can also find the information they are searching for in their own environments. Thus most of the characteristics of today's learning behaviour as described by Prensky (see above) are addressed.

#### 4.4 Making Information Literacy Contents available in the Environment of the User

Learning today is mostly informal microlearning on the internet. Users usually don't know what information literacy is and probably won't search for a course or online tutorial on information literacy. They want to find out about how to cite, how to find literature and facts, if their source is relevant, how they shall write their term paper, etc. They might not know that libraries offer this kind of information and would not search for it on library websites. So we should let them find the learning material on information literacy — ideally in micro units — and our reference services in their own environments on the web.

The reference service EconDesk is already integrated into Facebook<sup>5</sup>, WorldCat, every results list of EconBiz, the Virtual Library for Economics and Business Studies<sup>6</sup> (see figure 2) and all library websites and apps for mobile devices of the ZBW. A video clip on EconDesk is available on YouTube<sup>7</sup>. One idea, not yet put into practice, is to publish anonymized examples for question and answer pairs from EconDesk (including relevant links to the online tutorial LOTSE on information literacy) on Facebook, within the EconDesk website, and / or in a blog to make them available through search engines for a broader audience.



Figure 2: EconDesk in the results list of EconBiz, the Virtual Library for Economics and Business Studies

The single modules and video tutorials of LOTSE are indexed by search engines and so can be found individually. It is also planned to upload the video tutorials of LOTSE on YouTube.

<sup>5</sup> EconDesk in Facebook: [http://www.facebook.com/DieZBW/app\\_208195102528120](http://www.facebook.com/DieZBW/app_208195102528120)  
<sup>6</sup> EconBiz: <http://www.econbiz.de/en>  
<sup>7</sup> EconDesk in Youtube: <http://www.youtube.com/watch?v=BNINeTv5QOY>

## **5 Conclusion**

One should not misinterpret this paper as an argument against face-to-face or blended learning courses on information literacy. On the contrary, I think that courses are very relevant and very important to teach the broad context of the information market, the search, evaluation and use of information etc. Firstly, because we still do not know where microlearning is leading us. Can it show the big picture? Are micro units connected piece by piece in the right ways or will they lead to half knowledge and misinterpretation? Secondly, our specific learning matter, information literacy, is a necessary requirement for learning in micro contexts. Ideally users should be information literate before starting to learn on their own. They should know which sources to trust when they search for information on the internet etc. But nevertheless: digital natives are microlearners. So we shouldn't disregard other ways of teaching and learning that become more and more important for our users.

There is also the fact that we cannot reach everyone with courses on information literacy. As stated above, learning doesn't end with an exam but is a lifelong process. Software, the internet, our catalogues, databases, and the information market change faster and faster and we cannot keep pace with offering courses. Moreover, users increasingly use library resources online instead of visiting the library in person. So we should think of additional means of teaching and supporting self directed learning. E-learning in micro units seems to be a very good solution for supporting our users' needs.

The combination of EconDesk and LOTSE and the approach of microlearning empower the users to learn when, what, and how much they want. Libraries can address new users in their own environments and create a new library image by educating users competently, spontaneously and focused on the users' needs.

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