

# User-driven innovation of digital learning resources

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Martin Reng

University College Lillebaelt

Denmark

In the recent decades the Danish Government has invested a lot of resources in promoting the use of digital learning resources. IT infrastructure in Danish schools has been strengthened. Teachers' digital competences have been secured by means of an educational IT driving license. New E-services are regularly offered and in the period 2004-07, the Government introduced an ambitious programme, IT in Primary School (ITIF), which gave publishers the opportunity to seek funding to develop digital learning resources.

Despite this massive effort, the textbook still remains the most prevalent type of learning resource in Danish schools, and publishers report by consensus on the problems to create a market for digital learning resources.

Therefore National Knowledge Centre for Designs for Learning implements a two-year project to develop new business models and new approaches to the market that may enhance the professional political aims through the user-driven innovation of digital learning resources. Users include several stages and levels, from publisher level to school level. The project involves students, teachers, school librarians, educational consultants, researchers and producers in a cross-level innovation process that seeks to highlight new market opportunities and first mover benefits – It is primarily the results from anthropological studies in the project's first half that will be presented.

The project aims to develop and test new methods for user driven innovation of digital learning resources.

The project was initiated in 2009 and will end in February 2011 which goes to prove that we are half-way through the project now. The project holds approx. 40 participants. One of the methods that this project makes use of in order to promote innovativeness is field studies of the users carried out by a group of anthropologists. The aim is to be able to identify teachers' and students' needs in relation to digital learning resources. These needs should be clarified by May this year where we plan to develop prototypes of new digital learning resources.

In autumn 2009 the anthropologists taking part in this project carried out:

- 24 days of observation of users in six classes in six Danish schools
- Semi-structured interviews with 41 users as well as video-recordings of the same
- Home-visits together with six teachers and six students in order to gather information about the use of media outside school.

By means of the analyses of the information and data provided by the anthropologists, we have succeeded in proposing six recommendations to the producers of digital learning resources.

According to these, digital learning resources should:

- be easy to use
- make use of the opportunities of working product-oriented
- facilitate interaction between various learning resources
- be differentiable in relation to the individual student's level of competence
- open up for reciprocal teaching
- be distributable

### **Digital learning resources should be easy to use**

Teachers as well as students participating in these studies emphasize on various occasions that digital learning resources must be: uncomplicated, technically simple, and easy to relate to and understand.

The learning resources must be user-friendly (as is seen in products with simple interfaces such as TomToms, Ipods and sites like YouTube and Facebook). One of the words that seem to pop up quite often in relation to the teachers is the word *technology*. When teachers mention technology, what they have in mind is whether or not it is possible to use a particular digital learning resource in their particular school: is the school's internet reliable? Is it possible to use the digital learning resource by means of the computers available in the school etc? The teachers stress a non-reliable internet connection as the key reason for not implementing digital learning resources in the Danish schools.

### **Digital learning resources should make use of the opportunities of working product-oriented**

Publishers of learning resources should carefully take into consideration what sorts of products the students are to produce when working with a digital learning resource. Digital learning resources hold a special potential for creating products that look professional. For a number of students this is a significant motivational factor. Furthermore, it is imperative that the learning resource specifies how the learners will generate a sense of ownership in relation to the product they are to create and not least, how these products can become part of the teaching in general.

### **Digital learning resources must facilitate interaction between various learning resources**

A digital learning resource should not be seen as an isolated learning resource but must be able to interact with resources that are not necessarily part of its own didactic field. That is, it should be possible to include other teaching materials when working with a specific digital learning resource. A digital learning resource should be able to communicate with other learning resources so to speak. The majority of teachers as well as students consider this mandatory. In addition, learning resources must describe in details how this interaction between various learning resources could be achieved. In general learning resources have to be precise when it comes to the challenges the teachers face when combining several learning resources. The teachers consider it an advantage when learning resources list a number of criteria for (or provide recommendations on how to create such criteria) the students' web searches. Likewise, learning resources must allow for the

students to make use of their own digital tools. To give an example – the students should be able to use their mobile phone cameras if cameras are needed to document i.e. physics experiments – or – create pocket films in for instance mother-tongue-teaching.

### **Digital learning resources must be differentiable in relation to the students' level of competence**

When it comes to differentiation, there is no doubt that digital learning resources are far ahead of what we see when non-digital/traditional learning resources are being used. Digital learning resources are easily adaptable to the individual student's level. This is something the digital learning resource must take advantage of. For example – very often the same digitalized text can be found in a number of adapted versions – versions that may fit the reading level of various students.

Additionally, the learning resource must be designed to offer the student feedback when he works on his own. This feedback should be designed in a way that supports a communicative approach to receiving feedback and not only focus on *rights* and *wrongs*. An interactive assistant is a good example of how this can be approached – such assistants offer relevant academic information when the students are in need of it in order to solve a task or proceed with their projects.

### **Digital learning resources should open up for reciprocal teaching**

Digital learning resources should enable the students to teach each other. On several occasions the teachers stress that digital learning resources are particularly suited for what the teachers often refer to as *social learning*. Very often the students' IT skills are above those of the teachers which means that having the students teach each other is of great relevance.

### **Digital learning resources should be distributable**

In Denmark non-digital learning resources are distributed easier and in a more systematic way than is the case when digital learning resources are in focus. In Denmark learning resources in general are distributed through a number of Resource Centers, however, the non-digital learning resources seem to be far more in focus than the digital learning resources. One reason for this could be that it is by far easier to display non-digital learning resources and draw attention to these. Therefore we need to develop new ways of disseminating digital learning resources here in

Denmark. Producers of digital learning resources thus need to emphasize that the implementation and the daily focus on digital learning resources must apply to all teachers. Obviously, it might very well be a good idea to appeal to lead-users hoping that the digital learning resource through these may gain a foothold among the majority of the teachers. Nevertheless, the results of this study go to prove that it is neither a reliable nor an efficient approach.

For further information: [www.digitalelaeremidler.dk](http://www.digitalelaeremidler.dk)