

# Exploring new criteria to design materials for online education

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## Purpose

Despite the importance of the educational resources in e-learning initiatives, there is still much to learn about the criteria guiding their design and development. This study aims to examine new design criteria for teaching and learning materials used in computer-mediated environments.

## Theoretical framework

In university education based on e-learning systems, the teaching resources are a critical element. This is because in order for the teaching and learning processes to develop properly in this type of environment, the student must interact dynamically with the content.

Hypermedia resources have much potential as allow the students to have more control over their own learning process, incorporate various multimedia elements, make the e-learning environment more realistic (Steuer, 1992) and improve the individual's cognitive capacity.

Nevertheless, learners often do not exploit fully the potential of hypermedia resources: sometimes they explore the different options available to them to only a shallow level; in other cases, they revise the teaching materials on paper and attempt to read the material linearly, though the material was not designed to be used in this way; and at times, they find it difficult to choose between the numerous navigational paths and are apprehensive about adopting an active role, which is consistent with the risk of feeling lost in “hyperspace” (Burbules and Callister, 1996).

Consequently, our work proposes additional criteria for the design of hypermedia learning resources:

Criterion 1: Do not establish a maximum page length a priori and allocate each block of knowledge to a page regardless of the length of page that it requires.

This criterion involves the simplification of the hypertext structure. As there is evidence about the students' tendency to adopt a non-active role when exploring hypertext (Hiltz, 1997), to read the material linearly or sequentially (Beasley and Smith, 2004), and not to consult all the resources and tools available to them (Karuppan, 2001), although they are sufficiently trained to study online (Ryan et al., 2001), we propose not to fragment the contents excessively between a large number of pages.

Criterion 2: To provide a wide range of tools to aid in the navigation.

Navigation menus, clickable indexes of content and contextual orientation tools prevent the students from feeling lost and from perceiving that they could be overlooking some “essential” content (Beasley and Smith, 2004).

Criterion 3: To make intensive use of multimedia resources.

When presenting simultaneously the resources, in order to increase the number of sensory dimensions, the perception, comprehension and recall of contents will become higher (Honebein *et al.*, 1993).

Criterion 4: To have a consistent integration of hypermedia and printed materials, instead of treating them as mutually exclusive.

This integration is justifiable because the students less used to online environment, can work with hypermedia resources in the early stages of the learning process and use printed materials to make the final analysis and revision. This version is easy to use in any daily situation, as it permits underlining, adding notes and make a linear reading. Moreover, the students most predisposed towards online education can experience this process entirely through the hypermedia version of the materials.

## **Conclusions**

The current work has identified a number of criteria for the design of hypermedia teaching resources that should help overcome the difficulties discussed. These criteria include the incorporation of additional tools of contextual orientation and aids to navigation; limiting the fragmentation of content through hypertext systems; an intensive use of teaching resources in various formats (multimedia) to stimulate different sensory perception pathways; and the integration of two editions of the material that contain identical content but are adapted to two specific contexts of reading and study (online and off-line).

## **Future research**

On the basis of the proposed design criteria the authors will develop a set of teaching resources for the Foundations of Marketing Management course taken by 962 students of the Open University of Catalonia.

An online survey will be used to obtain information about the students’ degree of acceptance of the new teaching resources and compare the students’ perceptions and attitudes towards this new material with their perceptions and attitudes towards the existing resources in Economic and Business Studies.

## **Implications for research**

Hypermedia resources are particularly important in developing educational strategies based on the use of ICT. Apart from the benefits of using hypermedia teaching materials, the students have some difficulties in using them effectively. For example, they often have difficulty in changing their traditional study habits, are insecure and confused during navigation and online work, and perceive the material to have poor usability. These disadvantages are particularly significant in the final stages of the learning process when the students want to revise and consolidate the concepts learnt. Therefore, it is necessary to identify and test new criteria for overcoming the mentioned drawbacks in the design of hypermedia teaching resources.

## **References**

**Beasley, N.; Smyth, K.** (2004) “Expected and actual student use of an online learning environment: a critical analysis”, *Electronic Journal on e-Learning*, 2 (1), 43-50.

**Burbules, N.C.; Callister, T.A.** (1996) "Knowledge at the crossroads: some alternative futures of hypertext learning environments", *Educational Theory*, 46 (1), 23-50.

**Hiltz, S.R.** (1997) "Impacts of college-level courses via asynchronous learning networks: some preliminary results", *Journal of Asynchronous Learning Networks*, 1 (2), 1-19.

**Honebein, P.C., Duffy, T.M.; Fishman, B.J.** (1993) "Constructivism and the design of learning environments: context and authentic activities for learning", in Duffy, T.M., Lowyck, J.; Jonassen, D.H. (Eds.), *Designing environments for constructivist learning*, Springer-Verlag, 87-108.

**Karuppan, C.M.** (2001) "Web-based teaching materials: a user's profile", *Internet Research Electronic Networking Applications and Policy*, 11 (2), 138-149.

**Ryan, G., Valverde, M.; Rodriguez-Ardura, I.** (2001) "Marketing education, distance learning and hypermedia: teaching 'current issues in marketing' in a virtual campus", *Marketing Education Review*, 11 (3), 41-54.

**Steuer, J.** (1992) "Defining virtual reality: dimensions determining telepresence", *Journal of Communication*, 42 (4), 73-93.