

# **e-Learning in Higher Education: Searching for a model of curriculum analysis**

Linda J. Castañeda

PhD Candidate in Educational Technology (Universidad de les Illes Balears)  
GITE: Educational Technology Research Group. University of Murcia.  
Campus Universitario de Espinardo, Murcia, Spain.  
[lindacq@um.es](mailto:lindacq@um.es)

**Abstract.** The main purpose behind the design of this experience is the idea of obtaining useful information to know how the online courses in our University have been developed, and trying to understand the process from planning to completion. With this information we intend to provide teachers involved in our research reports that reflect what happened and offer proposals for improvement for future editions of their courses, and at the same time mapping, modelling, testing and validating a model of curriculum analysis useful to teachers and designers to enable them to plan and work in on-line courses at the level of Higher Education.

**Keywords:** Technology Enhanced Learning, curriculum development, higher education, e-learning.

## **Supervisors:**

Dr. Paz Prendes (Universidad de Murcia)

Dr. Jesús Salinas (Universidad de les Illes Balears)

## **1 Introduction**

With this work we intend to enter more profoundly into a line of research that has proved of great interest both nationally and internationally: the study of the processes of implementing new technologies in the context of the higher education curriculum, attempting to design and test a model to analyse the e-learning curriculum.

Until now, research focused on e-learning and on curriculum, has been carried out separately. On one hand there are several classic studies which have explored the elements of curriculum in education (Bishop, 1985; Block, 1971; Bloom, Et Al. 1956; Gagne, 1965; Kelly, 1982; Krathwohl, Et Al., 1964; Lawton, 1973; Marsh, 1997; Pratt, 1980 & 1994; Rowntree, 1974; Steinhouse, 1975; Tanner & Kennet, 1988; Taylor, 1975; Toohey, 1999; Tyler, 1949, among others), these studies have proposed some models of analysis. In addition, many recent studies have analyzed different examples of implementation of ICT in education, course design, and development of ICT tools for e-learning, as in the work of Area (2000, 2001, 2003), Bates (Bates, 1999; Bates, 2000 ; Bates, Manuel & Oppenheim, 2007), Collis (Collis & Gommer,

2001; Collis & Moonen, 2001 and Collis and Van der Wende, 2002), Kirkuk & Kirkwood, (Kirkuk & Kirkwood, 2005), among others, or more specifically in the study of the impact of new technologies on academic models, as in the studies of Oliver (2000a, 2000b), Salinas (1996; 1999; 2002; 2004, 2007, De Benito and Salinas, 2006), Valverde (2001 and 2004), or the study called "Virtual models in European Universities" -published in 2004- carried out by the Danish consultancy Rambøll Management for the European Commission on how teachers adopt models in different universities and implement ICT.

In all these studies the elements of curriculum are analyzed within the context of traditional education (face to face in the same place). Some of these studies use ICT as a resource to teach. Only in a few more recent pieces of research do they analyse e-learning from the pedagogical point of view. Unfortunately, in this literature there does not exist an original study on e-learning in the curriculum as a whole, as a concept complete and complex. Consequently, professionals who are working in e-learning at universities (teachers, tutors, managers, designers) do not possess sufficient skills to design, develop, analyse and evaluate e-learning actions effectively. And this is a very serious problem, especially if we take into mind that the majority of these people are not educationalists.

Consequently, our proposal is to examine this issue in depth, starting from the understanding of the evolution of curricular models used in online courses in our university (The University of Murcia, in Spain), and at the same time considering the issue more generally, while validating a theoretical and practical model of analysis of curriculum development in online courses.

## **2 Research Question:**

Our research starts with several fundamental questions:

- How are normal teachers, with or without previous pedagogical training, in traditional universities developing curriculum for online courses?
- Is it possible to recognize, understand and model the key factors which have evolved in the curriculum development of every on-line course in higher education?
- Is it possible to map these factors efficiently in a model of curriculum development?

### **2.1 Objectives:**

To attempt to answer these questions, we have proposed educational research based on our experience at the University of Murcia and focused specifically on certain objectives:

- Recognizing and analysing which model of curriculum development is behind each online course offered by the University of Murcia in the year 2004-2005 (the pilot experience) as well as in the year 2007-2008.

- Describing and understanding the planning as well as the decision taking processes of each teacher in the curriculum of their online courses
- Analysing and exploring how students work in each course with these models, and how they use the online tools proposed by teachers
- Contrasting the incidence of diverse curricular planning elements in the normal functioning of each course and in the participants' level of satisfaction, as well as in the results of them.
- Analysing, where possible, how each course has changed each year in terms of planning.
- Clearly formulating some useful proposals for improvement for teachers and for the University, in order to be able to take further decisions both about online courses and university curriculums.
- Proposing, at the same time, key factors to improve the online tools used in the University of Murcia.
- Designing and testing a model of curriculum analysis which could provide useful support to teachers in order to plan as well as evaluate online courses at different levels of virtuality.

### **3. Methodology:**

#### **3.1 Research Paradigm:**

The main purpose behind the design of this experience is the idea of obtaining useful information to know how the online courses in our University have been developed and trying to understand the process from planning to completion. In the end we intend to analyze how different factors affect planning and curriculum development in different contexts, scientific fields, at fundamental levels, organizational models in different centres (faculties, departments), and obviously, with a large variety of students.

In addition to this ultimate goal, we intend also to provide teachers involved in our research reports that reflect what occurred and in addition offer proposals for improvement for future editions of their courses.

Based on the above mentioned, we understand the paradigm of research that underlies our research project is the qualitative paradigm, and therefore responds to the main features mentioned by Cuba and Lincoln, (1982, 1983) and expounded by Colás (1998:250 -251):

- "Conception of multiple reality": this understands that the reality of the implementation of a course is a process that involves many different processes: the preparation of specific resources, the planning methodology, administrative constraints, technological constraints, the personal situation of our students, teachers, and so on. And we understand that they must be

studied holistically, and therefore analysed together as well as interdependently.

- "The main scientific objective is understanding the phenomena." Beyond any kind of research processes, we want to precisely understand the nature of the material (??) and how each agent involved in each process analyses and understands this.
- "Researcher and object of research are interrelated, and interact and influence each other". This research has taken place in the University and has been developed by a team which is in direct contact with faculty teachers, and this group tries to work in parallel with them .
- "The main goal is not intended to reach universal abstractions, but concrete and specific universal facts". Our research is focused on a very specific environment which, like any other curricular context, is determined by several factors that mean none of their experiences can be totally capable of being reproduced at any other time or in a different environment. Consequently, trying to extrapolate our findings directly and abstractly in all contexts would be more than pretentious. Nevertheless, surely we can provide valuable and specific information about "what happens here," that can be adapted and used in other contexts.
- "Simultaneity of events and interactions in the educational process, makes it impossible to distinguish causes and effects", this is the reason we opted for the study of the holistic educational reality of each of these subjects.

### 3.2. Research Methodology

In the same way as has been explained in the previous point, but trying to achieve greater manageability of data, we opted for a mixed methodology. We have tried to combine tools for collecting qualitative and quantitative information in order to achieve greater and better data complementarity.

### 3.3. Analysis Model

For this study we designed a very ambitious model of analysis. We have made an assessment at three moments (initial, process and final), and we have centred it on three different focuses:

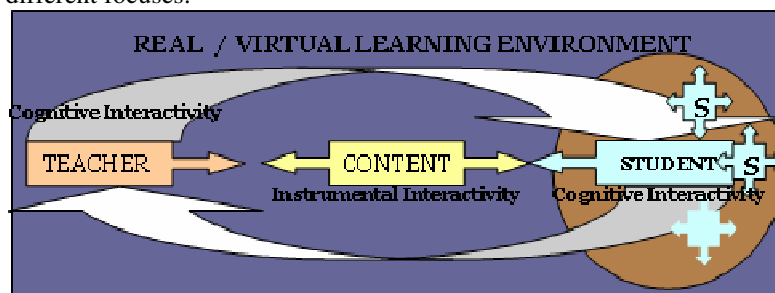


Figure 1: Focuses of Analysis

The first is the focus on the teacher and the teaching role. The second is the student and the learner roles and functions. These both include the relationship they have with the level of people and learning: Cognitive Interactivity (Prendes, 1995) and relationships between content–people and environment–people: Instrumental interactivity. Finally, the third focus is on the on-line information: contents, resources, and coherence between plan, used materials and methods.

To appropriately analyze these three focuses we use a model based on four dimensions or cross axis: planning, flexibility, interactivity and virtuality; and we have analyzed 7 of the curriculum models on each course across these four dimensions:

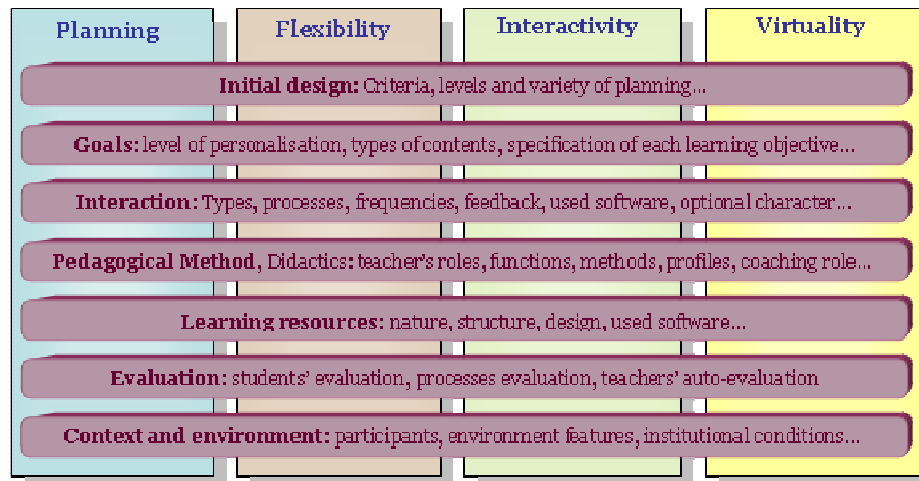


Figure 2: Analysis elements

In order to build a real model of analysis, we are trying to model and map this to build a real and useful tool for teachers and designers.

Obviously, before modeling and mapping, we have tested this, and to this purpose we have recovered information at three different times, using various instruments:

<i>Initial</i>	<i>Process</i>	<i>Final</i>
<ul style="list-style-type: none"> <li>▪ Teachers' semi-structured interviews</li> <li>▪ Students' on-line questionnaires</li> <li>▪ Revision of official and institutional documents about the course and students</li> <li>▪ Statistics from the students services</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers' portfolio</li> <li>▪ Students' portfolio</li> <li>▪ Resources evaluation</li> <li>▪ Statistics from the LMS used</li> </ul>	<ul style="list-style-type: none"> <li>▪ Teachers' semi-structured interviews</li> <li>▪ Students' on-line questionnaires</li> <li>▪ Statistics from the LMS</li> </ul>

We are analysing “naturalistic” courses. The research team didn't have any control over teachers or students motivating or addressing the information or the choice of the people. They only followed our instructions on how to recover the information.

As we have previously said, in the first year (2004-2005) we analysed 15 courses, 18 teachers and more than 200 students. In this year (2007-2008) we have been analyzing 21 courses, the same number of teachers and more than 300 students.

## References

- AREA, M. (2000): “¿Qué aporta Internet al cambio pedagógico en la educación superior?” en PÉREZ, R. (Coord): *Redes multimedia y diseños virtuales*. Actas del III Congreso Internacional de Comunicación, Tecnología y Educación. Universidad de Oviedo. Septiembre 2000 (128-135).
- BISHOP, G. (1985): *Curriculum Development*. London: Macmillan.
- BLOCK, J. H. (1971): *Mastery learning: theory and practice*. New York: Holt, Rinehart & Winston.
- BLOOM, B.S. et al. (1956): *Taxonomy of educational Objectives, I: Cognitive Domain*. London: Logmans
- GAGNE, R. M. (1965): *The conditions of learning*. New York: Holt, Rinehart and Winston.
- KELLY, A.V. (1982): *The curriculum theory and Practice*. London: Harper Education Series.
- KRATHWOHL, et al. (1964): *Taxonomy of educational objectives, II Affective Domain*. London: Longmans.
- LAWTON, D. (1973): *Social Change, Educational Theory and Curriculum Planning*. Open University Set Book. London: Hodder and Stoughton.
- MARSH, C. (1997): *Key concepts for understanding curriculum I*. London Falmer.
- MARSH, C. (1997): *Planning, Management & Ideology. Key concepts for understanding curriculum II*. London: Falmer.
- PRATT, D.(1980): *Curriculum: Design and Development*. New York: Harcourt Brace Jovanovich.
- PRATT, D. (1994): *Curriculum Planning: a Handbook for professionals*. Worth, London: Harcourt Brace College Publishers.
- ROWNTREE, D. (1974) *Educational Technology in curriculum development*. London, New York: Harper & Row
- STEINHOUSE, L. (1975): *An introduction to curriculum Research and Development*. London: Heinemann
- TANNER, L. & KENNET, J.R. (1988): *Critical Issues in curriculum*. Chicago III.: NSSE.
- TAYLOR, P.H. (Ed.) (1975): *Aims, influence and change in the primary school curriculum*. London: national foundation or Educational Research.
- TOOHEY, S. (1999) *Designing courses for higher education*. Buckingham: Society for research into Higher Education & Open University Press
- TYLER, R. (1949): *Basic principles of curriculum and Instructuion*.
- COLÁS, P. (1998) “La metodología Cualitativa” En COLÁS, P. y BUENDÍA, L. *Metodología Educativa*. Sevilla: Alfar
- COLLIS, B. & GOMMER, E. M. (2001). Stretching the Mold or a New Economy? Scenarios for the university in 2005. *Educational Technology*, XLI(3), 5-18.
- COLLIS, B. & MOONEN, J. (2001). *Flexible learning in a digital world: Experiences and expectations*. London: Kogan Page
- COLLIS, B. & WENDE, M. VAN DER (Eds.) (2002) *Models of Technology and Change in Higher Education: An international comparative survey on the current and future use of ICT in higher education*. Centre for Higher Education Policy Studies, University of Twente, The Netherlands. Documento en línea [consultado el 10-10-2006] en <http://www.utwente.nl/cheps/documenten/ictrapport.pdf>

- COLLIS, B. & WENDE, M. VAN DER (Eds.) (2002) *Models of Technology and Change in Higher Education: An international comparative survey on the current and future use of ICT in higher education*. Centre for Higher Education Policy Studies, University of Twente, The Netherlands. Documento en línea [consultado el 10-10-2006] en <http://www.utwente.nl/cheps/documenten/ictrapport.pdf>
- DE BENITO, B; SALINAS, J. (2005): Situaciones didácticas en los entornos virtuales de enseñanza-aprendizaje (EVEA) en la enseñanza superior: elaboración de un instrumento de análisis. Comunicación presentada en *Congreso Internacional EDUTECH 2005*. Formación del profesorado y Nuevas Tecnologías. Santo Domingo (República Dominicana)
- KIRKUP, G. & KIRKWOOD, A. (2005) "Information and communications technologies (ICT) in Higher Education teaching – a tale of gradualism rather than revolution" En *Learning, Media and Technology*, 30 (2). pp. 185-199. ISSN1743-9884. Documento en línea [consultado el 15-03-2007] en <http://oro.open.ac.uk/6213>
- LAURILLARD, D. (2003) "Rethinking University Teaching in the Digital Age". En *Educause Review*. EDUCAUSE Documento en línea [consultado el 10-10-2006] en <http://www.educause.edu/ir/library/pdf/ffp0205s.pdf>
- MARTÍNEZ, F. (1990) "La Educación ante las nuevas tecnologías de la comunicación". En *Anales de Pedagogía*. Universidad de Murcia, 8. 159-180
- MARTÍNEZ, F. y PRENDES, M. (2003) "Redes para la formación" En MARTÍNEZ, F. *Redes de Comunicación en la enseñanza*. Barcelona:Paidós
- OLIVER, R. (2000). *Creating Meaningful Contexts for Learning in Web-based Settings*. Proceedings of Open Learning 2000. (pp 53-62). Brisbane: Learning Network, Queensland.
- OLIVER, R. & TOWERS, S. (2000). *Benchmarking ICT literacy in tertiary learning settings*. In R. Sims, M. O'Reilly & S. Sawkins (Eds). *Learning to choose: Choosing to learn*. Proceedings of the 17th Annual ASCILITE Conference (pp 381-390). Lismore, NSW: Southern Cross University Press.
- SALINAS, J.(1996): *Campus electrónicos y redes de aprendizaje*. En SALINAS, J.y otros (Coord): *Redes de comunicación, redes de aprendizaje*, . Servicio de Publicaciones de la Universidad de las Islas Baleares ,Palma de Mallorca. 91-100
- SALINAS, J.(1999): *¿Qué se entiende por una institución de educación superior flexible?*. Edutech99. Sevilla Septiembre.
- SALINAS, J. (2002): "¿Qué aportan las tecnologías de la información y la comunicación a las universidades convencionales? Algunas consideraciones y reflexiones". En: *Revista Educación y Pedagogía*. Medellín (Colombia): Universidad de Antioquia, Facultad de Educación. Vol XIV, No. 33, (mayo-agosto), pp. 91-105
- SALINAS, J.(2002): *Modelos flexibles como respuesta de las universidades a la sociedad de la información*. *Acción Pedagógica* 11(1). Universidad de los Andes, Venezuela. P.4-13.
- SALINAS, J. (2004) "Cambios metodológicos con las TIC: estrategias didácticas y entornos virtuales de enseñanza-aprendizaje". En *Bordón: Revista de orientación pedagógica*, ISSN 0210-5934, Vol. 56, N° 3-4, 2004 (Ejemplar dedicado a: *Educación con tecnologías / coord. por Lorenzo García Aretio*), pags. 469-481
- SALOMON, G. (1999). *Higher education facing the challenges of the information age*. In *European Journal for Education Law and Policy*, V3(1), 43-47.
- SALOMON, G. (2002) "La Educación Superior frente a los desafíos de la Era de la Información" en *Boletín de la Red Estatal de Docencia Universitaria*. 2, 2. Documento en línea [consultado el 12-12-2004] en [http://www.uc3m.es/uc3m/revista/MAYO02/redu\\_boletin\\_vol2\\_n2.htm](http://www.uc3m.es/uc3m/revista/MAYO02/redu_boletin_vol2_n2.htm)