

28 Learning Faculty to Teach with an E-Learning Platform: Some Design Principles

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Abstract

The implementation of electronic learning platforms requires new competencies of faculty members. Institutions of higher education are challenged to support their staff to acquire those competencies. Training seems to be an interesting way to do so. This paper includes a brief description of a faculty development programme of the Katholieke Universiteit Leuven (Belgium). The evaluation of the programme - both by the trainers and the participants - clearly pointed at the necessity to carefully analyse the characteristics of the participants, as well as the competencies needed to integrate successfully an e-learning platform in one's teaching practice. This exercise led to the formulation of some design principles for faculty development programmes on e-learning platforms. The change of faculty members' teaching conceptions as well as the attention for their stages of concern can be pointed at as crucial elements of these principles.

Keywords: design, faculty development, e-learning platform

1. Introduction

In July 2001 the Katholieke Universiteit Leuven decided - like many other institutions for higher education - to acquire a commercial e-learning platform for the whole university. This decision was based on several arguments. One of these was that the central support offices could no longer sustain faculty members efficiently as software and languages used to develop platforms by faculty proliferated. On top of that and more importantly, an explicit concern for the students, who risked to be confronted with different platforms motivated the decision.

In order to successfully implement this innovation the Toledo (Toetsen en Leren Doeltreffend Ondersteunen; Effective support of Assessment and Learning) -project and -team were created (Buelens, Roosels, Wils & Van Rentergem, in press). Different support initiatives were set up. A faculty development programme '*The Digital Chalk*' was one of these. The general aim of this training was to help faculty

acquire all competencies needed to integrate the electronic platform in their teaching practice in such a way that both they as teachers and the students could benefit most. The introduction of the e-learning platform - in other words - was meant to function as a lever for educational innovation, so that the implementation of the university's student centred teaching concept 'Guided independent learning' (Elen, in press) would gain strength.

2. Format of the training

'The Digital Chalk' consisted of four elective modules: an introductory module, a design module, a module about information delivery and one about communication facilities.

Lack of time between the acquisition of the platform and the announcement of the training initiative forced the trainers to base the design of the initiative on the most obvious and salient goals and assumed characteristics of participants. We assumed for instance that faculty members do not want to spend a lot of time on teacher training courses. We therefore split the training into independent modules, each of them lasting 3 hours (including a coffee break).

With regard to the objectives that were set for the training, the focus lied on the development of particular insights and competencies we considered essential in order to use the two main functionalities of a platform, namely information delivery and communication (modules 3 and 4). More specifically, it was considered important that participants gained insight in the influence of information (its forms and structures) on learning. They should also become aware of the influence people give to certain elements of information) and of communication between students and teachers and among students on learning. Evidently, the participants also had to learn to use on an instrumental level the different functionalities of the platform regarding information and communication. This stresses the importance of a profound insight in the features of the platform (module 1). Because the different functionalities of the platform need to be integrated into each other and into the global learning environment, the systematic process of decision making faculty members should go

through in order to decide if and how to use the platform in their teaching was presumed essential (module 2).

More details about the concrete learning environments that were set up in each of the modules are given below:

Introductory module: This module consisted of a demonstration of the functionalities of the platform and an assignment for the participants. The assignment required the participants to actually use the platform. All questions of the participants regarding this module (received with their registration) were answered in the demonstration or through the assignment.

Design module: During this module participants were guided through a limited analysis of their own teaching practice. Questions they had to answer were ‘Give two competencies you want your students to acquire’, ‘How would you characterise your students?’, ‘What activities would help those students to acquire the competencies?’, ‘How will you evaluate whether they acquired the competencies?’, ‘What problems could students have during their learning process?’, ‘How could you as a teacher help students with those problems?’, ‘Which functionalities of the e-learning platform could you use to help your students and how will you use them?’

Module about information: This module consisted of three parts: first the participants had to explore different formats of information put on the platform about a specific topic (lightning). The exploration had to be done from a technical perspective, for example ‘What is the size of this file?’, and from a didactical perspective, for example ‘Is it obvious for you what to do with this information?’. During the second part the technological implications of putting information on the Internet was treated. The third part was focused on the influence of different kinds of information (words, pictures, moving pictures, etc.) on students' learning.

Module about communication: During this module participants were given the chance to explore different communication functionalities of the platform. Most of the time was spent on discussions in different groups via the discussion forum about a question, a comparison and a postulate regarding electronic communication. All questions, comparisons and postulates were inspired by the ‘questions’ participants submitted when they subscribed for the training. At the end of the module the different discussions were summarised.

All four modules were organised during semester holidays between September and April. Participation in the first module was a prerequisite for participation in the other modules, unless trainees already participated in an information session about the platform, another support initiative of the Toledo-team. There were no preconditions for participation in the other modules, although participation in the second one was recommended for the last two modules. Together with their

registration participants were asked to formulate a question regarding the subject of the module.

All faculty members of the university were invited (n=1424). Teaching assistants (n=851) could also participate but they did not receive a personal invitation. Across the four modules 192 subscriptions of 84 different people were received. Twenty-one people only subscribed for the first module, 26 people subscribed for all modules (all four or last three if they already followed an information module). Because the maximum number of participants for module 2, 3 and 4 was set on 25, only 73 people could actually participate. Many of them could not follow all modules they subscribed for.

3. Observations

Evaluation data were collected after each module with an open ended questionnaire. Based on the participants' comments and on the trainers' experiences following observations are worth mentioning:

- With regard to the *participants' characteristics*, it was noticed they all possessed basic computer skills. Trainers only very seldom had to support the mere technical use of the computer.
- Almost all participants' questions were formulated from the perspective of the teacher and on a rather instrumental level. Questions like ‘How do I...?’, ‘What is a solution for problem X that I expect to occur?’, ‘How do I manage the amount of work the use of the platform implies?’, etc. were typical, whereas questions that reflected a concern about the learning of students were rare. Similar observations are made in the literature (e.g. Entwistle, 1999; Fox, 1983; Fuller, 1969, 1975; Loucks-Horsley, 1996; Van den Berg & Vandenberghe, 1995) about the evolution of teachers' concerns. When confronted with an educational innovation most faculty members are first concerned about the implications of this innovation for themselves (*self-concern*). In a second phase faculty become more and more concerned about the implementation of the innovation (*ask-concern*). Only after going through these two stages, they finally question how this innovation can help their students to learn (*other-concern*).
- It also became clear - in particular during and after the first module - that some participants were forced by their dean, head of department, or programme co-ordinator to use the e-learning platform in their teaching. The question whether they would use the platform was already answered without even taking into account the goals students have to reach.
- The programme did not always seem to fit the participants' needs. Indeed, some participants dropped out, because of the ‘beginner's level of the training programme’ (n=2). It is presumed that those participants had other concerns

about the use of the platform than the ones that were handled during the training.

- With regard to the *design of the learning environment* created in the modules, assignments and discussions among participants created opportunities to utter doubts and uncertainties. For many participants it was a relief to observe that other faculty members have similar experiences and questions.

The fact that the training was not a once-only initiative had the side effect that participants began to appreciate that implementing a platform is a long term process.

Both the trainers and trainees were enthusiastic about using the participants' questions as an entry for exercises and discussion. The fact that these questions were taken into account in the different modules clearly responded to the immediate needs of (most) participants.

With regard to *the content of the training*, one can notice that as the university purchased an assessment platform beside the e-learning platform, no attention was given to the concept nor the practice of formative evaluation. Faculty members have to follow another training in order to learn to use that platform.

It was remarkable how positively the focus on the instrumental use of the platform was evaluated. The participants appreciated the fact that they were given assignments during the modules for which they actually had to use the platform. The one module in which less attention was paid to the instrumental use of the platform (information module) and in which the participants consequently were more passive, was evaluated less positively than the others.

The intensive instrumental training did not however hinder more didactical questions to be raised by the participants. Especially the usefulness of the different functionalities for their personal educational practice was questioned. The success of the design module might be related to this. The participants clearly appreciated the relatedness of this module with their own educational practice and the guidance they received by the analysis. As the university acquired an assessment platform beside the e-learning platform no attention was given to the concept nor to the practice of formative evaluation. Faculty members have to follow another training in order to learn to use that platform.

While the participants' educational practice was the starting-point of the second module, those practices were much less taken into account in the last two modules. One could raise the hypothesis that this jeopardises the transfer to their actual teaching practice.

One has to notice that some design and educational aspects of the delivery of information and communication were not dealt with in the second (design) module, because these aspects were supposed to be integrated in the last two modules. However, due to a lack of time and to the necessity

to learn the participants to use specific functionalities of the platform, the didactical use of those functionalities of the platform was discussed very briefly. More attention was given to the technological implications of different forms of information, of students' pre-attentive processes when consulting information and of ways of keeping the stream of communication manageable for faculty members.

A quick check of the e-courses set up by the participants after the training raises some doubts about the effectiveness of the training. The check revealed that most of them are still designed from a teacher perspective. Especially the delivery of information (as many as available) seemed to be the main goal of the courses: slides, articles, chapters from handbooks, hand-outs, etc. Furthermore, in many cases these courses are additional for students. They have to take them on top of the usual classes. The participants do not seem to integrate the platform in their regular teaching practice. The impact of the training programme on the participants' teaching conceptions seems to have been minimal.

The above observations illustrate that participants were enthusiastic about some aspects of the training. Yet, at the same time, questions can be raised as to what extent the training functioned as a lever for the (further) implementation of university's teaching concept, Guided independent learning. It remains a difficult task, however, to make statements about the quality of training initiatives such as 'The Digital Chalk', because one cannot refer to a clear set of criteria. In order to judge whether the training has been successful, one should at least be able to verify whether it enabled the participants to acquire the competencies that are essential for an innovative use of the platform. Therefore, a detailed analysis of the starting situation of the participants as well as of the desired outcome is essential. The analyses mentioned will be made in the following two paragraphs.

4. Participants' characteristics

In order to have an idea about the situation at the start an inventory of the characteristics of the participants is necessary. Based on the data received with the subscriptions, the experiences during training and the above observations the following inventory can be made:

- The group of staff members that is interested in an e-learning platform is very heterogeneous and this on different aspects:
 - o age (estimated between 25 and 55)
 - o gender (24 females, 60 males)
 - o teaching experience (beginning versus experienced staff members)
 - o educational responsibilities (14 teaching assistants, 67 tenured staff members, 1 programme director and 2 deans)

- studydomain (24 humanities, 22 exact sciences, 35 biomedical, 3 central services)
- The participants have the basic computer skills needed to learn to work with an e-learning platform.
- Many faculty members are mainly concerned about what this innovation means for themselves (self-concerned). There are indications - that need to be further explored - that these faculty members only register for an introduction to the platform. They are at least at that moment not interested in further training.
- Faculty who have been introduced to the platform already and who are interested in training, are mainly concerned about the performance or the instrumental use of the platform and about the management of problems (with students) they expected (task-concerned).
- Most participants have heard about 'Guided independent learning', the university's educational concept, but only some of them are familiar with the meaning of the concept.
- Although there are no empirical data to sustain it, taken into account the questions received before and during the training, most participants seem to adhere to a teacher centred vision on teaching and learning.
- to know and have insight in the different components of a learning environment: students' characteristics, goals, students' learning activities, content, support material, evaluation, context (Dienst Universitair Onderwijs, 2001; Clement, in press);
- to understand the interdependency of those components;
- to have insight on the influence of the structure and different forms (symbol systems) of information on the learning of students;
- to understand the influence of communication on learning;
- to understand the influence of formative evaluation on learning;
- to be able to translate the above insights to one's own educational practice in order to facilitate learning;
- to be able to analyse and (re)design one's own educational practice.

This second competency implies a student centred vision on teaching and learning. Indeed, both the systematic reflection on and the design of learning environments - as described above - demand from faculty that they acknowledge the central place of the students in learning and teaching.

5. Analysis of necessary competencies

The ultimate aim of the training is to enable participants to use an e-learning platform in educational situations in a meaningful manner. Such use requires faculty members to have two main competencies:

- to be able to use the platform in an instrumental way; and
- to be able to reflect systematically upon one's own educational practice.

The first competency implies that the faculty member:

- has to be aware of the different functionalities of the platform;
- is able to use the main functions and bullets of the platform;
- understand the structure and operation of this computer application. This implies that the user can anticipate on how the e-course will look like for students and how it will change over time, depending on if and how he/she put time limits on certain functionalities.

The second competency is more complicated. It encompasses a lot of other competencies. Staff members need:

- to have insight in how learning occurs;
- to know and have insight in the teaching concept of the institution one is teaching at;
- to be able to design different educational learning environments; this implies

6. Design principles

The above exercises to make an inventory of the characteristics of the participants (start situation) and an analysis of the necessary competencies to use an e-learning platform in a useful manner (desired situation) accentuates the gap between both situations. A first gap relates to the instrumental use of the functions and functionalities of the platform. Bridging this gap however seemed to be rather successful with the present design of 'The Digital Chalk'. The assignments that require an actual use by the participants of the e-learning platform can be taken into account for this. Obvious however is that the instrumental use of the platform is an absolutely necessary but not a satisfactory precondition for a meaningful use of the platform. A meaningful use of the platform requires a student centred approach and the most fundamental difference between the start situation and the desired situation seems to be the teaching conceptions of the participants. To bridge this gap, addressing the participants' teaching conceptions is absolutely necessary. Only then the introduction of the e-learning platform (and the training offered) can be a lever for the implementation of a student centred approach - such as the university's concept 'Guided independent learning'.

Changing conceptions however is not an easy thing to do (Tillema, 2000). Ho's (2000) analysis of the prevailing models

with regard to conceptual change, demonstrates that there are four critical elements in all programmes for professional development that pursue conceptual change:

- *self-awareness* of one's own teaching conceptions
- *confrontation* between one's own conceptions and practices and between one's own conceptions and conceptions of others.
- *exposure* to better, alternative conceptions
- *commitment building and refreezing*.

Before faculty members will adopt a new conception, this conception has to be intelligible, plausible and fruitful.

As a whole the models for conceptual change leave a rather rational impression. They evoke the idea that implementing the four critical elements will automatically result in conceptual change. However, the statement that a new conception has to be judged intelligible, plausible and fruitful by faculty before they will adopt it, hints at the fact that not only rationality is at stake in a process of change. Taking this and the observations made with regard to 'The Digital Chalk' into account, we want to stress the importance of the participants' *stages of concern*, a more 'emotional' element (Hargreaves, Earl & Moore, 2001; Van den berg & Vandenberghe, 1999). Research regarding those concerns (e.g. Loucks-Horsley, 1996) demonstrates that people only evolve from one stage of concern to another if questions and needs regarding the previous one (self or task) are answered and fulfilled. We therefore claim that for a training programme such as 'The Digital Chalk', participants' concerns should not only function as an indication of the level one should adjust the (starting) level of the training to. These concerns should also be taken into account in order to attain conceptual change.

Consequently two kinds of design principles can be formulated.

In order to provoke conceptual change in the participants during training it is preferable to:

1. offer participants a model or instrument that enables them to distinguish the different components of a learning environment (and their interdependency) and that they can use to analyse their own teaching practice with. This will grade up the awareness of their own teaching conceptions and - on condition that the analyses are shared among participants - will confront them with other conceptions and practices;
2. integrate the trainees' teaching practice into the training. It will allow participants to confront their conceptions to their own actual practice and that of their colleague trainees. Active exercises with regard to this practice will also add to the transfer of what is learned during training to this practice (Korthagen & Kessels, 1999);
3. elaborate the university's educational concept during the training. Not only its meaning should be explained, the

design of the training should also be in accordance with the concept (Laga, Elen & Waeytens, 1999). It offers the participants an example of an alternative or even better teaching conception than the one they adhere to;

4. integrate first realisations of participants. Discussing those realisations with other participants and trainers will allow commitment to change and refreezing to grow.

In order to take into account the participants' stages of concern one can identify next principles:

1. Hands-on experience should be scheduled during training. This fulfills direct self- and task-related concerns on an instrumental level.
2. Participants should get an answer to the questions related to their concerns. The training should be adjusted to their specific needs (see also Laga, et.al., 1999). Nevertheless, they have to be challenged during training by providing them information and assistance regarding the next phase (Loucks-Horsley, 1996; Laga, et.al., 1999). This includes for example questioning how learning occurs, discussing postulates with a teacher centred background, confronting participants' own educational practices with examples of teaching strategies designed from a concern about students' learning.
3. In order to be able to respond 'just-in-time' when staff members move from one stage of concern to another (and thus start questioning other aspects of the educational innovation) individual support should be available at any time and on request (Laga & Elen, 2001).
4. For the same reason, basic materials regarding graphic material, legal aspects, symbol systems, communication, feedback, interaction, etc. should be made available on the platform. This information also has to be explicitly supplied and discussed when participants ask such questions during a training initiative.

7. Conclusion

The above design principles will determine the design of 'The Digital Chalk' 2002-2003. Taken into account the differences in the target group (with regard to their stages of concern) different modules will be offered. The acquisition of the identified necessary competencies will be the overarching objective for the different initiatives. Every initiative will be focused on a specific part of the group of faculty members, characterised with certain concerns and teaching conceptions and will have specific objectives, all in line with the (sub)-objectives identified above. Change of the participants' teaching conceptions will be combined with attention for their stages of concern.

References

- Buelens, H., W. Roosels, A. Wils & L. Van Rentergem (in press). *One year E-learning at the K.U.Leuven: an examination of Log-Files*. (Paper to be presented on the European conference on "The New Educational Benefits of ICT in Higher Education" September 2002, Rotterdam, The Netherlands).
- Clement, M. (in press). Analyseren van een opleidingsonderdeel, In J. Elen & E. Laga (Eds), *Muizen in het auditorium: ICT in het hoger onderwijs*. [Mouses in the audience: ICT in higher education] Antwerpen: Garant.
- Dienst Universitair Onderwijs (2001). *Begeleide zelfstudie: een brochure voor docenten*. [Guided independent learning: a brochure for faculty members]. Leuven: Katholieke Universiteit Leuven.
- Elen, J. (in press), The reality of excellence in higher education: The case of guided independent learning at the K.U.Leuven, In E. Decorte (Ed.), *Excellence in higher education*. London: Portland Press.
- Entwistle, N. (1999), 'Expanding awareness of learning, studying and teaching', in M. Lacante, and P. De Boeck (Eds.), *Meer kansen creëren in het hoger onderwijs, [Creating more opportunities in higher education]*, (pp. 129-151), Dordrecht: Kluwer.
- Fox, D. (1983), 'Personal theories of teaching', *Studies in Higher Education*, 8(2), 151-163.
- Hargreaves, A., L. Earl & S. Moore (2001). *Learning to change: teaching beyond subjects and standards*. San Francisco: Jossey-Bass.
- Ho, A. S. P. (2000). A conceptual change approach to staff development: a model for programme design. *The international journal for academic development*, 5(1), 30-41.
- Korthagen, F.A.J. & J.P.A.M. Kessels (1999). Linking theory and practice: Changing pedagogy of teacher education. *Educational Researcher*, 28(4), 4-17.
- Laga, E. & J. Elen (2001). Characteristics of support initiatives to stimulate professional development on ICT. In J. Price, D. Willis, N. Davis, & J. Willis (Eds), *Proceedings of SITE 2001 - March 5-10, 2001*, 692-697. Norfolk, VA: Association for the Advancement of Computing in Education.
- Laga, E., J. Elen, & K. Waeytens (1999). Supporting the use of ICT to improve instruction in higher education. In s.e., *Improving University learning and Teaching, 24th international conference- July 5-8, 1999*, pp. 465-470. Brisbane, Australia : Griffith University.
- Loucks-Horsley, S. (1996). Professional development for science education: a critical and immediate challenge. In R. Bybee (Ed.) *National standards & the science curriculum*. Dubuque: Kendall/Hunt Publishing co.
- Tillema, H.H. (2000). Belief change towards self-directed learning in student teachers: Immersion in practice of reflection on action. *Teaching and Teacher Education*, 16(5-6), 575-591.
- Van den Berg, R. & R. Vandenberghe (1999). *Succesvol leiding geven aan onderwijsinnovaties: Investeren in mensen* [Successful leadership for educational innovations: Invest to people]. Alphen aan den Rijn: Samsom.
- Van den Berg, R. & R. Vandenberghe (Eds) (1995). *Wegen van betrokkenheid: Reflecties op onderwijsvernieuwing* [Ways of concerns: Reflections on educational innovation]. Tilburg: Zwijzen.