
ECOMPETENCE CASE STUDIES

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1. Introduction

Frequently, eLearning implementations in universities cross the boundaries between existing institutional cultures, values, structures and pedagogy. Key issues, which must be addressed to ensure the effective use of ICT in European higher education, include the shift in emphasis from teaching to learning, the changing role of teachers, pedagogical approaches, the complex interactions between various specialists and departments, quality assurance, organisational change and staff development. How these relate to one another and are embedded into wider institutional strategies for innovation and development is of particular importance. In terms of the technology, how can eCompetence be developed and how does the pre-existing use influence the situation?

In this paper we present some details of the processes undertaken in the *European eCompetence Initiative* to explore these issues in some depth. We will present two illustrative and representative case studies and show what conclusions we are able to draw from these. The European eCompetence Initiative is a specialised, large size network of 23 partners, which focuses on individual competence development and organisational strategies for the use of ICT in teaching and learning in higher education. The research aims to identify and understand patterns of individual and organisational eCompetence approaches within the wider eLearning activities and strategies of the participating universities.

The initial approach was to construct an online questionnaire, allowing each participant to submit examples of *effective practice* in their universities. These were analysed and assessed against a set of evaluation criteria linking to strategic approaches. Four examples were then selected for further in-depth study based on document analysis and interviews. A model of eCompetence measures, developed during the project's Vienna symposium (September, 2004) was used as the framework for this further work. This provided insight into the factors critical for change in universities at both the institutional and the individual level of eCompetence. Two of these four examples are discussed here to provide details of our methodology and analysis.

2. Research Approach

2.1 *Initial Data Gathering and theoretical model*

The eCompetence Initiative defined two subtopics within the project structure for the organisation of its research activities. These subtopics are:

- Subtopic A: Field-based analysis of eCompetence programs in Higher Education.

- Subtopic B: Policy-focused analysis of the integration of eCompetence programs into institutional innovation strategies in Higher Education.

A mixture of qualitative approaches has been used combining “desktop” research, document analysis, questionnaires, structured interviews and workshop evaluation. The analysis generally follows the steps in Figure 1.

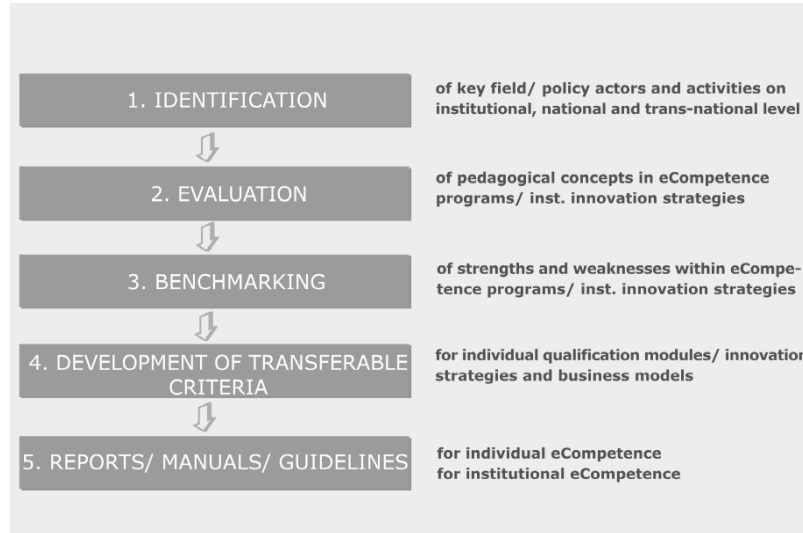


Figure 1: Research Steps of the European eCompetence Initiative

A web-based survey (based on the style used successfully by EDUCAUSE (1)) was used to collect a range of example practices of eCompetence development from across the entire project consortium. The questionnaire asks a series of open and structured questions along with providing scales for a small number of indicators. It was essential that such examples were “real-world” programmes or implementations of strategy and not simple policy statements or intentions.

To set the scene an initial, working definition of eCompetence was used:

"What is eCompetence? The definition of eCompetence used in this project covers a number of aspects on technology-driven education innovation. There is a distinction between personal and institutional eCompetence. Both, however, describe the capacity to successfully use eLearning technologies in routine educational practice. For example, the personal eCompetence of an individual teacher describes their ability and confidence at using ICT in their teaching and course delivery. For an institution, it would describe the structures, processes and policies in place that embed ICT use." (2)

Contributors were then asked to provide a compact description on practices or solutions, which they relate to the issue of eCompetence. The descriptions have a title, a paragraph on the background or challenge that was to be tackled, a paragraph on the practice or solution itself, as well as short paragraphs on the benefits, shortcomings and future plans for this practice.

Some 31 responses were obtained and a first analysis was undertaken and presented for discussion at the Galway symposium (April, 2005) by Thomas Pfeffer from the University of Klagenfurt and Sjoerd de Vries from the University of Twente (3).

These two researchers proposed a model of networked education (figure 2) as a basis for the analysis. This model derives from the 'technologies in form' approach, which Fulk and DeSanctis (1999)¹ have developed within the theory of social construction. Fulk and DeSanctis assume that attitudes towards and uses of technologies converge in social systems. Pfeffer & de Vries describe their perspective on networked education as such: "Technology and educational settings become more and more incorporated into each other, which also has consequences for the roles and social arrangements in educational processes. Examples are communities of practices, online courses, virtual projects, and collaboratories. In general, educational technologies are based in networks like the internet; therefore we refer here to these usages as *networked education*." (4)

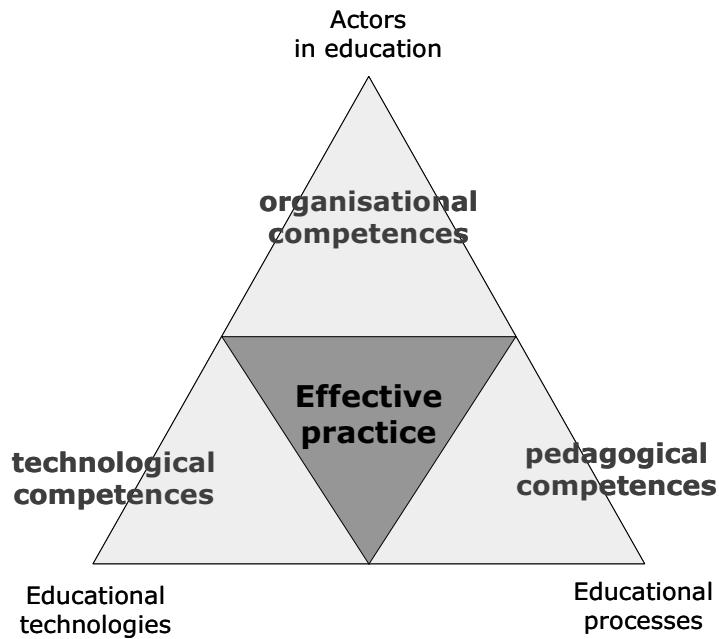


Figure 2: Key variables and competences in the effective eCompetence practices

Figure 2 presents the basic aspects of the networked education approach and its main variables. The first variable of a networked education context are actors in education. The educational technologies are identified as the second variable, and educational processes taking place in the networked education context are defined as the third variable. Each variable has an influence on the construction of a networked education context. In this approach, *eCompetence in networked education is seen as a set of interrelated competences in the fields of technology use, pedagogical design, and the organisation of teaching and learning.* (5)

In all three fields, the university as an institution needs to foster and to combine the competences of its individual staff members to deal with technology integration in the most appropriate manner. This database and the associated detailed case studies, we believe, will provide an excellent resource for academic staff developers and institutions for future analysis and policy development.

¹ Fulk, J., and DeSanctis, G. (1999). *Articulation of communication technology and organizational form*. In G. DeSanctis and J. Fulk (Eds.), *Shaping organization form: Communication, connection, and community*. Newbury Park, CA: Sage.

2.2 Approach to Case Study Analysis

The case study methodology was selected for our research into European eCompetence development for a number of reasons. The particular strength of the methodology lies within the strong emphasis on investigating phenomena “in real-life events and contexts, especially when the boundaries between phenomenon and context are not clearly evident.” (5). Also for research investigations dealing with questions of “how” and “why,” the case study approach is particularly apt, being, on the one hand, *exploratory and descriptive* and, on the other, *explanatory and interpretative* (6). Finally, where there is a lack of control of events and individuals in the process under study, case studies are one of the few appropriate methods.

All of these conditions apply to our current research given that we are dealing with the questions of *how* and *why* eCompetence development is carried out, financed, conceived of and fostered in the real-life setting of a number of universities. The research into eCompetence takes its starting point in self-descriptions of the actual practice at hand, and the events have taken place prior to the investigation presented here. It can, therefore, be concluded that the investigators have had no control of or influence on the practices of eCompetence development. From the practice descriptions (<http://www.ecompetence.info/form/>) it also becomes evident that the phenomenon in question, eCompetence, is explained in the light of the context, the university submitting the practice description, which makes it plausible to argue that the boundaries between phenomenon and context may not be clear. These characteristics all support the selection of the case study methodology for an exploratory and explanatory investigation of eCompetence development.

The particular approach taken has been that of a *multiple holistic case design* (7). This design creates a holistic research frame consisting of a number of single cases, which are investigated individually but also collectively in the multiple case study approach. It is emphasised that each case must serve a specific purpose (8). This purpose is expressed in the selection criteria used. Replication, “either a literal replication predicting similar results, or a theoretical replication, predicting contrasting results but for predictable reasons” (9) is the strength of the multiple holistic case design. The tool for replication of the case study is the 5-step-model used for constructing the interview guide. This model contains the hypothesis that a practice of competence development can be analysed and interpreted through the understanding of a project having a life-cycle with identifiable phases, where stakeholders act in relation to the aims to develop the competences in question. Using this model allows us to compare and to contrast the findings of the analysis and in doing so we replicate the findings from one case unit to the next.

It is important to use and integrate multiple sources of evidence (10). In particular, here, we have used:

(1) Archival Records of the Case

- self-description of practice in effective practice database
- project documents (slide presentations, university strategies)
- internet URL’s of universities and practice web sites
- other records (i.e. articles, guidelines written by key actors in the practice)

(2) Interviews

The interview is characterised as one of the most important sources of information in a case study (11). In an interview situation, the investigators ask open-ended questions in the atmosphere of a conversation, following the thematic questions from the interview guide and allowing the respondents to comment freely on themes and matters not necessarily raised directly by the interviewers.

The case study method has been selected for this research into eCompetence development, because the method allows us to explore the *practice* of eCompetence development in the terms and premises of each single example and allowing us to explore the potential relevance to a wider national and European level. We can test the assumption that eCompetence might have different meanings in different contexts, depending upon who defines it and who practices it. With only four detailed cases the ability to generalise is limited of course; nonetheless the method and findings allow us to identify factors and parameters for change in teaching and learning due to the use of ICT and the development of eCompetence.

2.3 Case selection

From the submitted entries to our online database of effective practices we selected four example case studies which indicate a certain level of strategic planning in eCompetence development. The criteria used to select these particular examples were:

- the eCompetence development of the universities are part of a wider approach towards eLearning integration into teaching and learning and/or have defined strategic goals;
- the eCompetence development is not a temporary phenomenon, but taking place within the university over a longer period of time, with access to sustainable financial resources;
- the university has implemented long-term or permanent organisational structures and defined specific responsibilities for the implementation of the eCompetence development;
- the eCompetence development is combined with, or shows links to, the academic staff development program of the university.

Of course, each case has its own specificities, but they are taken as potentially representative of the range of perspectives/contexts on eCompetence in higher education. One important, common strand is this institution-wide approach.

The selected cases are in table 1:

Institution	Coordinating Organisation	Effective Practice
<i>K.U. Leuven</i>	AVNet	eCompetence: Guided Independent Learning, TOLEDO & Digital Chalk
<i>University of Pretoria, South Africa</i>	Dept of Telematic Learning & Education Innovation (TLEI)	Training in WebCT, Web support and Integration of Campus Systems
<i>University of Athens</i>	Dept of Informatics & Telecommunications	e-Class platform and using e-content to enhance classroom teaching
<i>University of Technology, Helsinki</i>	Teaching & Learning Development Unit	TieVie: a national training programme

Table 1: Four selected Case Study Examples

The practices from K.U. Leuven and the University of Pretoria represent development activities for the entire institution and each shows an internal, institutionally accepted definition or understanding of eCompetence. TieVie is an example of a multi-institutional network where strong levels of collaboration and cooperation are evident, driving change processes in individual, local universities. The University of Athens case illustrates linkages between national ICT funding schemes and institutional decisions to implement ICT in specific teaching and learning scenarios. Having such a

range from national to local organisational aspects should, hopefully, yield a greater clarity in terms of critical success factors for technology-driven change management.

2.4 Further details on method and related issues

International Context

We must of course, in any such study, take into consideration the particular aspects that arise from the international context of the research. The nature and characteristics of research in international projects is distinctive from research in a national project. The factors we need to consider are:

- English is the *lingua franca* that is used in the communication within the case study interviews and we have to be aware that the expression of concepts and detailed accounts is a more demanding task, if English is not the mother tongue of the interviewee (or indeed, of the interviewers). There is an increased risk of misconceptions and blurring definitions of specific phenomena.
- 4. There exist distinct university cultures and structures in each case. In particular, structural differences are relevant in investigating the wider strategic approach to eLearning in the selected universities. As for the role of academic staff development in eCompetence, we also face remarkable differences in the tradition and acceptance of staff development programs across the examples.
- 5. The organisational characteristics of the university as a higher education institution are of importance in interpreting the data. University size, financial status and programme offerings vary, as well as the university ranking and aspirations at national and international levels. This factor is inherent to any comparative analysis undertaken between institutional activities, and we will have to consider this more in detail in the comparison of the outcomes of each single case.

Interview protocols

Feedback and consultation were vital to the development and refinement of the interview schedule/protocol and considerable communication was aimed at obtaining relevant supporting documentation. Two interviewers, Helle Baekkelund and Dirk Schneckenberg, analysed all such papers in preparation for the questioning and undertook interviews with two members of staff from each institution through a conference call using Skype, the popular Voice over IP software. Each interview lasted for around 90 minutes and was recorded electronically and subsequently transcribed.

The analytical framework used to structure the interviews was based on a model developed during the Vienna symposium and which uses 5 steps, as in figure 4. The approach was flexible and adapted to suit the particular circumstances of each case, but this at least provided an outline that was held in common. The question types and themes of each step are summarised in table 2.

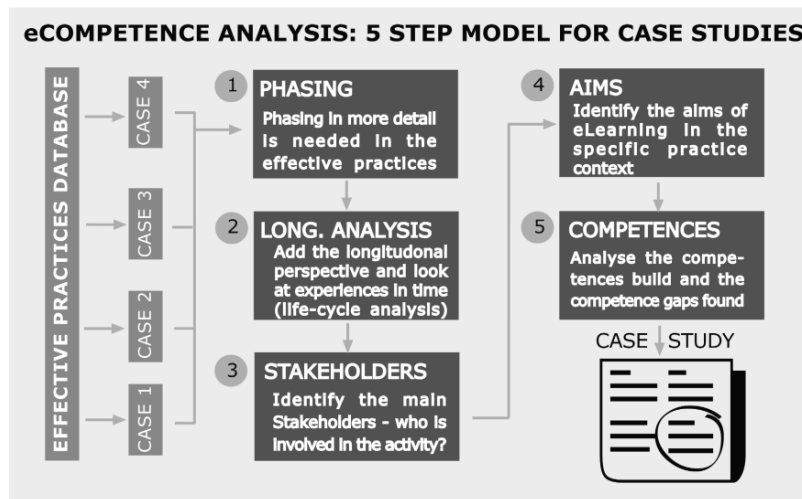


Figure 4: Five - Step model for the analysis of eCompetence development in the case studies

<i>Step</i>	<i>Aim</i>	<i>Interview Questions</i>
Phasing	Identify the main phases of the case/project under consideration	<p>When did the example start?</p> <p>How was it implemented?</p> <p>Could you describe the different phases/points of implementation?</p>
Longitudinal Analysis	Description of the example's entire life-cycle, exploring development, reflection and modifications	<p>Has the number of teachers attending the training courses increased/decreased in the life-time of the project?</p> <p>Has the use of ICT in teaching and learning increased or otherwise changed?</p> <p>Has the number of teacher trainers changed?</p> <p>How can the participating teachers be characterised (age, gender, faculty position, areas of teaching and research)?</p> <p>Has the flow of money/funding changed?</p> <p>Do you, from your perspective on the practice, see any particular phenomenon with regard to eCompetence and ICT-use in teaching and learning, which has changed?</p>

Stakeholders	Identify stakeholders, analysis of different levels of organisational process from institutional to individual.	<p>Who is involved in the practice:</p> <ul style="list-style-type: none"> • At the individual level (teachers)? • At the intermediate level (department/faculty level)? • At the leadership level? • What are the responsibilities of the different stakeholders?
Aims	Expressed and expected aims of the particular example practice described.	<p>What are the overall aims of the practice?</p> <p>How are the aims defined?</p> <ul style="list-style-type: none"> • Qualitatively (for instance - as a new pedagogical concept, defining new learning outcomes and competences of students, increased ability to reflect upon teaching practice and upon the appropriate use of ICT with regard to the context)? • Quantitatively (for instance - a certain number of courses online, a certain number of teachers attending training courses)? <p>Institutional aims (increased or changed support structure for teachers and students, increased or changed evaluation procedures of eCompetence of teachers and students)?</p>
Competences	Definition and practice of eCompetence within the example.	<p>Has your institution carried out a needs analysis or competence analysis in relation to its practice?</p> <p>Which definition and/or working understanding of competence can be identified in the described practice? For instance:</p> <ul style="list-style-type: none"> • Competences of teachers (technical competences, didactical competences, shifting in teaching and learning approaches, reflective competences)? • Competences of trainers? • Institutional competences (defining teaching and learning strategies, support structures)? • How does your institution motivate or encourage the development and implementation of eCompetence? • Do you see indications of both formal and informal competence development taking place? For instance:

		<ul style="list-style-type: none"> • Have other competences been developed, which were not expected when implementing the eCompetence training? • Team work ability? Reflective competence with regards to own teaching practice?
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Table 2: Framework for interviews.


3. Case 1: Helsinki University of Technology, Finland

3.1 Introduction

Riikka Rissanen, coordinator of teaching and learning at Dipoli (Lifelong Learning Institute), Helsinki University of Technology, submitted this case to the effective practices database and was interviewed along with her colleague Anna-Kaarina Kairamo. A detailed description of the project is presented elsewhere in this volume².

Putting the example into context it should be explained that the practice described (“TieVie”) is a collaborative training programme for academic staff in Finland’s³ 21 universities, based on a combination of online and face-to-face components with an assessment and certification. It developed from a network of staff development units at 5 Finnish universities and was supported by the Information Society Policy of the Finnish government (1999-2005).

3.2 Main Elements of the Submitted eCompetence Practice

	<p><i>Effective Practices Database Entry</i></p>
<p>Title</p>	<p>"TieVie" - a national staff training programme for ICT skills</p>
<p>Background</p>	<p>Due to fast technological development and new demands from students there was an urgent need to improve teachers’ skills and understanding of the use of ICT in teaching and learning Finnish Ministry of Education started to fund the Finnish Virtual University to promote networking among universities from the year 2000.</p>
<p>Practice</p>	<p>Training program provided jointly by participating institutions The focus of the training program is to increase the readiness of the teacher to use ICT in teaching and learning more effectively and in expedient ways. TieVie consists of 2 training courses: OPE.FI 2: “Programme of</p>

² See “The Portfolio as a Documentation Tool of eCompetence in the “TieVie” Training Programme,” Taru Jokinen, Anna-Kaarina Kairamo and Riikka Rissanen, pg. 121

³ Finland is a country with 5.25 million inhabitants and an area of 338.145 km². The country has 21 universities and more than 30 polytechnics. In 2004 the universities had 174.000 students and the polytechnics had 132.000 students. (19)

	<p>educational use of ICT for university teachers”, an 8 ECTS-points course, and OPE.FI 3: “Expertise development in educational use of ICT”, a 15 ECTS-points course.</p> <p>Participants work in interdisciplinary training groups taking part in a variety of training activities: virtual study modules, local workshops and the participants’ own development projects.</p> <p>Participants work in different group settings: peer groups, network groups, interest groups and mentored groups</p> <p>Participation is cost free, but travelling for the local workshops must be paid for by the participants’ institutions.</p>
Benefits	<p>Concrete collaboration and co-operation between universities, both among participants and among members of the coordination group</p> <p>Coherent understanding and equal skills in a large community of university teachers</p> <p>Promoting the development of a joint teaching culture, building a "common language"</p> <p>Providing tools from the micro level of concrete course planning to the macro level of strategy work and policy making in universities</p>
Shortcomings	<p>The existence of the TieVie training programme has depended on external funding from the Ministry of Education.</p> <p>The real connection between attending the training programme and participant's day-to-day work in their working communities is not obvious in every case. The TieVie training programme misses information and feedback about the practical applicability of the trained eCompetences.</p>

3.3 *Analysis of Case Study Interview*

The following is a descriptive and interpretative analysis of the interview carried out with the two experts from Dipoli Institute of Lifelong Learning at Helsinki University of Technology.

3.3.1 *Phasing*

Phase 1 – Application

The application for the TieVie-program was written in 1999 as a response to the second call of the Information Society Policy of the Ministry of Education. The application phase had a duration of 6 months. The coordination group consisted of staff development units of five universities. The units within the five universities decided autonomously who should be involved in the application process and the project.

Phase 2 – Piloting Phase in the First Year

This phase was preceded by some local piloting in the universities and by the universities’ existing experience with academic staff competence development, but the first round of national courses in 2000-2001 is considered the first phase of training. The goals of the first round of courses are described as follows:

- learning how to undertake this networked training concept and collecting feedback from the participants

- learning about this kind of structure and whether the chosen elements in the courses (also content) are useful

Phase 3 – Working Phase

The duration of this phase was four years and consists of the four rounds of training courses following the piloting phase. Even though the courses have been slightly changed every year as a result of evaluations and feedback, this phase is still considered to be consistent and homogeneous.

The major turning point, and thus the end of phase 3, is very easily identified due to a lack of funding. The TieVie-project did not receive the funding applied for in 2005. This has led to a change in the course programme.

Entering Phase 4? - Intermediate Phase

As a result of the decrease in funding, several changes have been undertaken in the year 2005-2006. The interviewees deem it too soon to announce a phase 4 of the project at this point of time, but they consider it a possibility. Therefore, this phase can be interpreted as an intermediate stage, characterised by the dropping of the OPE.FI 2 course (the 8 credits course) and a redesign of the OPE.FI 3 course to also include quality aspects of eLearning.

Viewing this as a transitional stage rather than an ending of the project is supported by the indecisive character of the described changes, since the interviewees report discussions about the re-introduction of the 8 credits course due to a great demand for it still and due to the fact that it is not possible for all universities in Finland to run this course locally. At the same time there are plans to develop a new course on a more advanced level than the existing advanced course of 15 ECTS, and the possible collaboration with international universities for this is also mentioned. As Ms. Rissanen said: “I don’t know whether it’s the ending point or the beginning point, but it’s some sort of change anyway.”

A schematic overview of the phases of the case:

Phase:	Activities:	Duration:
Pre-phase	Application and concept development	6 months
Piloting phase	First round of courses	1 year
Working phase	Next four rounds of courses	4 years
Intermediate phase	Redesign of courses	At least 1 year

3.3.2 Longitudinal Analysis

Here, the main focus of the interview is to identify change patterns during the lifetime of the project.

The Number of Teachers – Decreased or Increased?

In 2001 the number of teachers participating in the TieVie-program was 200 attendees in the 8 ECTS-points course and 60 in the 15 ECTS-points course. After 2001, there was a slight change in the numbers of participants in the advanced course, where the attendance rate went up to around 100. That attendance rate has been stable since then. The attendance rate of the basic course went down to also around 100 participants, and that attendance rate has also been stable since.

The changes in attendance rates are considered a natural development of the competence acquisition taking place by participating in the courses. More than 900 teachers have passed courses on TieVie in the period of 2001-2005.

The Use of ICT in Teaching and Learning – Increased or Otherwise Changed?

This is considered a difficult question to answer, since the meaning of the term “ICT in teaching and learning” is ambiguous and not clearly defined. One approach to answering the question is to explicate the local, common understanding in the Helsinki University of Technology: “ICT and the web is a very useful tool for providing services and also externalising of some of the processes related to teaching and learning”. Seen in that light, where the university provides electronic services, the use of ICT in teaching and learning has increased considerably. But in this network approach between 21 universities, it is not possible to give a general answer.

The Number of Teacher Trainers?

The number of teacher trainers in the TieVie-program has been stable in the lifetime of the project, around 10-12 people with the occasional use of outside experts. Since the awareness of the importance of teaching and learning has grown, approximately 100 teachers pass the 15-ECTS-course every year including an increasing number of staff working in the field of teacher training in general, the number of informal teacher trainers (peer learning among colleagues in the universities) may have gone up.

The Flow of Money/Funding – Has it Increased or Decreased?

Grant funding has been the basis for running the training courses and for the first three years (phase 2 and phase 3) funding has been on the same level. This year (2005) and next year funding has gone slightly down, but there’s a possible increase in funding from 2007. The project needs to be funded externally or, otherwise, centrally. It is deemed impossible to run the courses based on participants paying for them.

Any Other Phenomena which have changed?

The attention to ICT in teaching and learning has changed in the sense that it has shifted focus toward integration of ICT into the traditional pedagogical practice as well as organisational change. The discussion of integrating ICT tools into normal teaching and learning practice has increased within the last year. The relation to the training program of TieVie is in the content of organisational change, where the emphasis is on the working community of the university organisation as opposed to the individual teacher’s own teaching practice.

3.3.3 Stakeholders

The aim of this theme in the interview is to learn about different levels of organisational processes and the responsibilities of the stakeholders on the different levels. Within the networked approach in this case, with a national collaboration between 5 universities and the participation of all 21 universities in the competence development, questions about stakeholders provide us with knowledge of nationwide patterns.

The Individual Level – Teachers

The teachers participating in TieVie in the piloting phase were mainly teachers from the humanities-based universities and departments. When entering the working phase of the project this pattern changed, since more participants from technological universities started attending the courses. This change pattern is explained by an increased understanding of TieVie providing *pedagogical* training, rather than simply ICT-tool training. ICT-tools in themselves are not relevant for staff at technological universities, since they are already knowledgeable and competent. But the added value of learning how to use ICT-tools in a pedagogically sound manner has become visible and accepted during the working phase of the project.

Three types of motivation can be identified among the participating teachers:

Type:	Intrinsic/extrinsic motivation:	Characteristics:
The “lone riders”	Intrinsic	decide individually to participate in course to develop their pedagogical competences
The “supported” participants	Intrinsic - extrinsic	recommended to participate by their department leaders and also supported by their departments
The “strategically required” participants	Extrinsic	all staff members in a unit are required to participate by the unit’s strategic goals for pedagogical development

The ratio of extrinsic to intrinsic motivation in the participants is approximately 50/50. In terms of gender, more women than men participate, which may reflect the staff structure within the 21 Finnish universities.

The learning outcomes of the strategically required participants seem to be positive. But the value of their learning does not become evident to these participants until after the course is completed when they see how to apply the knowledge and understanding gained in their teaching practice. In their evaluations, these initially critical participants say that they had not realised this learning value during the course. This implies that the main learning outcome of the course is achieved and actualised in teaching practice.

In order to pass the course, the participants must take part in the face-to-face seminars (in OPE.FI 2 there are four seminars, in OPE.FI 3 there are two). Second, there are course assignments (both individual and group assignments) integrated into the virtual seminars, in which they must actively participate. Third, they must work with an element of their own teaching, which must be either implemented or planned during the training programme. This implementation into their own teaching must be reported and documented.

The Intermediate Level – Department/Faculty Level

The emerging pattern at the intermediate level is one of strategy and strategic vision for pedagogical competence development. When a department or a faculty has such a strategy teachers get strong support and encouragement, or are even required to participate in this type of work. In departments and faculties without a strategy in this area, the motivation and support for pedagogical staff development lies with the Heads of Department.

Leadership Level

The leadership level is not considered as central for the successful encouragement and support of teachers to participate in TieVie-courses. Symbolic support can be observed at the leadership level of the universities, but the driving factor for change lies with the upper political level of the government and the lower organisational level of department and faculty leadership.

Geographical differences within the stakeholders?

The aspect of geography becomes especially important in a national networked project with 21 autonomous universities. Finland is a country with a great distance between north and south (the greatest length is 1157 kilometres and the greatest width only 542 kilometres (20), and this created the need to look for patterns potentially due to geographical reasons.

Geography is taken into account by the TieVie-project group by having the face-to-face seminars in different locations across the country, so that all participants will have to travel at some point during the year of the course. A geographical pattern of the participants is not identifiable. Instead it seems that the size of the universities is decisive for interest and participation in TieVie. *The smaller universities of Finland seem more interested to cooperate in national programmes.*

3.3.4 Aims

The overall aim of TieVie is to implement the national strategy of ICT in universities. This is unfolded in an agreement within the TieVie-group that the aim is to train teachers on OPE.FI 3-level to both become ICT-in-Education-experts within their own field of teaching and to become ICT-in-Education-specialists capable of supporting university staff in their own faculty in developing pedagogically sound ICT-use in their teaching. But the main focus of the participants in OPE.FI 3 is still their own field of expertise. Thus, it could be an aim for the individual participant to network with teachers from other universities, who teach in the same area, in ICT implementation in teaching and learning.

Qualitative or Quantitative Definition of Aims?

The general qualitative goal is a general ambition to improve the quality of teaching and learning in by use of ICT. There also seems to be a strong belief that making teaching and learning processes more explicit is a way to improve the quality of teaching and learning. In the courses, this aim is followed up by a course design focusing on providing ideas and models for the use of ICT in teaching and learning for the participating teachers to reflect upon and to choose models and ideas relevant for their own teaching situation.

Qualitative aspects do not feature explicitly in the definition of aims, apart from providing the training to a number of participants, the only other numerical indicator could be based on the number of study weeks, etc.

3.3.5 Competences

Needs or Competence Analysis Carried out in the Frame of the Project?

No needs or competence analysis has been undertaken either within the general frame of the 21 universities or within the five universities in the coordination group. Competence analyses are undertaken in some of the universities, with a focus on general academic staff competences. Other types of analyses are about ICT-skills and focus on very specific skills through questionnaires. The TieVie-project group is however required in the future to develop tools for analysing eCompetence (not ICT-skills).

A Definition of eCompetence?

It stands out clearly in the interview that there is no explicit definition of eCompetence in the project. Since the different parts of the TieVie-courses have explicit learning goals for the participants, one might add up the learning goals for the OPE.2 and OPE.3 to sum up elements of an eCompetence definition. But it stands out equally clearly that there are *working* understandings of eCompetence embedded in the project. In the overall aims it is evident that the teachers' ability to reflect and select appropriate models for teaching and learning and to integrate ICT in these models, where the use of ICT is pedagogically sound, is effectively a working definition of eCompetence. An embedding into teaching practice also seems to be part of the working definition of eCompetence. So *reflection* and *selection* are followed by *implementation* and *practice*. The participating teachers engage in collaborative networks with teachers from other universities, and they emphasise in all evaluations that the networking is the best element of the training program. In this respect, networking and collaboration can be interpreted as an element of eCompetence.

During the interview it was revealed that the TieVie courses are integrated into several different eLearning platforms. In the beginning of the project three or four platforms, at the time of the interview, two platforms and a future ambition of going back to at least three different platforms. This design of the virtual course phases reflects the reality of the universities in Finland, where many universities support the use of one or two platforms but at the same time allow teachers and departments to use others. This indicates that a Finnish working definition of eCompetence also includes the ability to plan and carry out pedagogically sound teaching and learning in different eLearning platforms and the ability to shift between platforms. This is characterised as a frustrating experience by the interviewed experts, but it is still considered “one of the things that you have to learn to cope with” (p. 17, interview transcript).

The competences of the 10-12 teacher trainers are founded on many years of experience with competence development in the area of teaching and learning and the use of ICT. It is emphasized that a reflective competence is also an element in the understanding of the trainers’ competence, since the trainers can invite guests with expertise in specific areas to contribute to the courses. be part of the trainers’ group as a result of the TieVie-trainers’ reflection of own expertise areas.

The interviewed experts’ visions for the organisational competences are closely related to an understanding of eCompetence being an integrated element of general pedagogical frameworks.

3.3.6 Summary

The case of the TieVie-project shows clear patterns in the phases of the project from planning through piloting and operation. In addition, there has been stability in the numbers of participants from year to year for the courses offered, but there has been an increased uptake from those in technology-based institutions, due to an awareness that the training focuses on pedagogical application.

The key organisational levels for the support of this development are at university management and departmental level, driven by specialist learning and teaching/staff development units, although, of course, the project was funded overall by central government support.

The benefits of providing a collaborative networked structure are well-recognised by participants as a programme strength, building links between colleagues across institutions. Whilst it is difficult to measure the actual application of the developed competences in teaching practice, there is an observed shift in general attitude towards ICT in teaching and learning.

The definition of eCompetence is not formulated explicitly in the project. The working definition of the project includes the following characteristics:

- a conceptual understanding of eLearning being an integrated part in teaching and learning
- teachers should be able to reflect and select teaching and learning models making use of ICT only when it is relevant and appropriate
- teachers should be able to apply theoretical knowledge of teaching and learning on their teaching practice, thus be able to change their teaching practice
- teachers’ eCompetence is not measured by the mastering of only one eLearning platform but by the ability to shift from one virtual learning context to another
- the fostering of eCompetence requires skilled trainers and networked collaboration
- the fostering of eCompetence receives crucial support from competence development strategies on both national and local level

4. K.U Leuven, Belgium


4.1 Introduction

Founded in 1425, K.U. Leuven is now one of 14 universities in Belgium. It consists of 14 faculties, 50 departments and offers 62 academic programmes. There are over 30,000 students, 1,396 academic staff, 3,011 researchers and an administrative and technical staff complement of 2,730 (21). It extends over three campuses in Leuven and one in the City of Kortrijk.

The mission statement of the university outlines its aspiration to be a centre of excellence in many research fields, ranking high in international comparisons. It places strong emphasis on its institutional autonomy and the academic freedom of its individual staff. It sees its strength also reflected in its approach to fundamental research, its focus on education and the wide range of courses available spanning almost all academic disciplines (22).

Core to its approach to teaching is the institutional philosophy of *Guided Independent Learning* (GIL), which provides a pedagogical framework for all teaching and learning activities. Teaching is, according to the documentation, based on and nourished by research and interdisciplinarity. The intention is to cultivate within students the capacity for independent study, by providing individual guidance, appropriate evaluation and assessment, as well as the use of new teaching methods and technologies. This context, presumably, also shapes the institution's approach to eCompetence. Specific elements such as the TOLEDO platform and the Digital Chalk training programme provide practical examples expanded upon in the case study.

4.2 Main elements of submitted eCompetence Practice (23)

 <p>EU [eComp]Int EUROPEAN e-COMPETENCE INITIATIVE</p>	<p><i>Effective Practices Database Entry</i></p>
<p>Title</p>	<p>eCompetence in K.U. Leuven, Belgium</p>
<p>Background</p>	<p>Until some years ago, all newly appointed teachers were offered a teacher training that mainly focused on lecturing and evaluation (especially with respect to multiple choice testing). The recognition of the potential of ICT for education lead (a) to the implementation of a new educational concept for K.U.Leuven's education and (b) to the acquisition of an eLearning platform in which this concept could be realised. As an educational concept "guided independent learning" was chosen as a comprehensive approach that could/would affect both traditional formats of teaching and (mainly web based or supported) independent learning by the student. The eLearning platform "Toledo" (Toetsen en Leren Doeltreffend Ondersteunen; Effective support of Assessment and Learning) is an integration of Blackboard(TM), Question Mark(TM) and knowledge pool repository system Ariadne. However, this implementation forced the rethinking as well as extension of teacher training.</p>
<p>Practice</p>	<p>A Toledo-project and Toledo-team were created (Buelens, Roosels, Wils & Van Rentergem), and several support initiatives taken. The faculty development programme "The Digital Chalk" aims at helping faculty acquire all necessary competencies to integrate the electronic platform in their teaching practice and support students in their</p>

	<p>"guided independent learning". The Digital Chalk training consisted of four elective modules: an introductory module, a design module, a module about information delivery and one about communication facilities. It focused on the development of necessary competencies as well as insight in the influence of information on learning, and concentrated on the information delivery and communication capabilities of the Toledo platform. Each module session lasted 3 hours, offered over a period of about 8 months. It consisted in a mix of (a) reflection on the own teaching practice, (b) demonstrations of examples of good practice and (c) assignments. These had to be worked out in between the training sessions through the use of the platform. Concrete "technical" instruction in the use of the platform elements was offered through a separate series of information and hands-on training sessions that addressed the whole university community. The Toledo team as well as the University Education Support Office provided individualised support for the Digital Chalk trainees for the elaboration of their assignments, which had to lead to useful instructional materials. Additional technical support could be found in the Toledo helpdesk. The book "Muizen in het auditorium" (Mice in the lecture theatre), written by the trainers team as the result of a former teacher training, provided background information on various aspects of learning, instructional design, use of educational media, organisation of education, etc.</p>
<p>Benefits</p>	<p>Most trainees found the training very helpful and both trainers and trainees were enthusiastic about using the participants' questions as an entry for exercises and discussion, as this responded clearly to the immediate needs of most participants. The instrumental use of the platform to solve educational problems (through assignments) confronted the participants with the potential as well as consequences of the university's pedagogical concept of guided independent learning. The fact that extensive support is available (and used) to elaborate on the assignments - for many of the participants their first experiences with the development of eLearning materials in general and with the Toledo platform in particular - is an additional benefit.</p>
<p>Shortcomings</p>	<p>A quick check of the e-courses set up by participants after the training revealed however that most of them still design their e-teaching from a teacher perspective. Also the integration of the platform in their regular teaching practice remains marginal. In repetitions of this training, more hand-on experience should be scheduled (more extensively), models and concrete examples provided (preferably in the platform itself), and where possible the support should be provided "just-in-time" (i.e. the training scheme should where possible be adapted to the stages that the teachers go through while making their e-courses, instead of forcing them to pay attention to specific aspects on the basis of an external training scheme.</p>

Future Plans	The training course is being updated, repeated and extended (involving a growing number of staff). It is tried to back-up the participants not only by central support, but also by support staff at faculty/departmental level. It may be considered to use the former trainees as mentors for the actual ones.
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A major benefit reported is the fact that training within the Digital Chalk Course modules builds on specific questions and demands. The tailored delivery of training has been received in a positive way by the participants. In addition, the option to ask for extensive support to create digital teaching and learning elements in the specific contexts has been evaluated as useful and innovative element of the practice. The shortcomings stress the need to offer even more tailored training solutions to the teachers, as the demand for *just-in-time* support has been pointed out in the evaluation of the practice. External training courses have been assessed by the teachers as too time-consuming. Future plans subsequently concentrate on the issue of tailored support, trying to strengthen the support units at faculty level, and to create a network of mentors.

4.3 *Analysis of the Case Study Interview*

4.3.1 *Phasing*

Starting Point

As the specific eCompetence development is embedded in a range of organisational activities, a concrete starting point is not easily determined, as it would deny the evolutionary process, characteristic of the Leuven approach. The foundation of the TOLEDO project team and the subsequent set up of the Digital Chalk training programme are mentioned as one core activity related to the development of eCompetence for academic staff. The TOLEDO team was established in 2000 and the implementation of the TOLEDO platform took place in 2001, but of course there has been a long history of development of the Audiovisual Service and collaborative ventures with the Open University of the Netherlands (in digital course development), the widespread use of PCs and ICT integration across all aspects of the institution's work. The Guided Independent Learning concept was first formally adopted in 1999.

Implementation Approach

The Digital Chalk programme is the key formal training course for academic staff to gain eCompetence. The focus of the training is the development of particular insights and competences, which are essential for the effective use of the TOLEDO platform in teaching and learning. As described in the effective practices database entry, it is based on four (three hour) modules which progressively build towards final completion. Several non-formal and informal activities also contribute towards individual staff development, supported by expert staff, aiding teachers in the production of content and the implementation of the concepts into their own courses.

One additional measure of K.U.Leuven in the field of eCompetence development is the creation of a summer school for newly appointed academic staff at the university. The summer school is offered every two years and usually runs for one week. The summer school is organised by the Digital Chalk team, which is a sub-unit of the Central Support Unit for Pedagogical Affairs at the university. Demand for the summer school has been higher than the number of available places, so the training seems to be well received.

At a central institutional level, K.U. Leuven offers eLearning support for academic teachers at faculty and department levels. These small support units or cells consist of 1-3 experts, which link the central services with the target group at faculty level and offer on- or close-to-the-job advice for academic

teachers. The experts, which organise this faculty-based support, normally know the subject area well and have a good understanding of the conceptual and teaching issues.

In summary, then, the implementation of ICT integration and eCompetence development at K.U. Leuven is a complex strategy of intervention at several levels, with support units at central institutional and at faculty or department level.

4.3.2 *Longitudinal Analysis*

Use of ICT in Teaching and Learning

A needs analysis is conducted each year to design and determine the contents of the Digital Chalk course through consultation with around 100 staff members. The course, then, is defined by emerging needs arising from discussion with staff and, indeed, students. The learning model has also evolved with time, with a significant move in the '80s towards a model of technology supported research education. An advisory group, within the university, collects and interprets evidence related to pilots and projects carried out in the field of ICT in education, reporting the results to the university management, advising them to take specific actions, and to distribute financial support.

Number of Teachers Attending Courses

The individual modules are limited to 15-20 participants by design. The numbers have remained steady and the number of trainers has also been constant at around 10, located at the Central Support Unit for Pedagogy and Didactics.

Adding to the number of teachers at central institutional level are additional supporters from the Central Support Units, AV-Net and Information & Computing, which occasionally assist academic teachers in specific activities related to eLearning. Demand for this eLearning related training is still lower than supply (offered to academic staff). Then again, the supply creates an awareness of needs to acquire new competences.

Change in Funding

The courses are part of the educational plan of K.U. Leuven, which the university leadership has agreed upon, and the funding for eCompetence training is taken from the educational development funds. Funding is assured as a fixed amount, granted for a term of four years.

Any Particular Phenomenon That Has Changed

A major change, which is currently evolving at K.U. Leuven, is the growing use of wireless technology and mobile devices, which are being taken up rapidly by students. As students bring new technologies into the university, teachers need to adapt to the changing communication and learning habits. They need to prepare themselves for a student population, which is more willing to use the new technologies and acquire new competences than the teachers themselves often are. This evolution has been dubbed in the ongoing eLearning discussion as the *digital natives* (students) vs. *digital immigrants* (teachers) divide in education and higher education (Prensky, 2001)⁴.

A structural change at institutional level is the introduction of programme committees, which are implemented vertically within the course structure of the bachelor and master's cycle. The programme directors, who chair the committees, negotiate the curricular organisation on the basis of the content of a study year. This programme reform has created awareness within academic staff of the need to acquire eCompetence. Curriculum reform and technological innovation are connected with each other as common influencing factors on the teaching habits of teachers and their willingness to acquire competences related to the practical implementation of the GIL concept. There seems to be a gradual

⁴ "Digital Natives, Digital Immigrants", M. Prensky, *On the Horizon*, 9, 5, 2001

change taking place within the work culture of the academic staff members, a common reflection that they will have to acquire new competences to teach and properly educate future students.

4.3.3 Identification of Main Stakeholders

Stakeholders at the Individual Level

Stakeholders at individual level do not primarily include individual teachers, but rather address and involve *teaching teams*, which include a number of teaching assistants and other support people. At K.U. Leuven, the establishment of teaching teams is strongly supported as a change element within the learning culture. For the e-aspect of specific courses, it is not only the teacher, who is encouraged to acquire eCompetence, but it is in particular the team member, who will be responsible for the digital elements within the course. In the group of academic teachers, the focus for initial eCompetence training is on new teachers entering their academic career, as senior teachers often have established habits, which are difficult to change. Teaching evaluation has raised awareness by the established staff of the need to acquire new, ICT-related competences.

Stakeholders at the Intermediate Level

At the intermediate level (departments and faculties), *programme coordination commissions* are one important forum, where eCompetence-related discussions are taking place. Here, curriculum programmes are discussed and, next to pedagogical questions and the division of labour, the integration of ICT elements, the competences needed for this, and the kind of support are key topics in the discussion. The faculty support units or “cells” play a central role in the supply of ICT-focused support measures within curriculum implementation.

Stakeholders at the Leadership Level

At the leadership level, it is not primarily the heads of departments and deans of faculties, which encourage the teachers to acquire eCompetence. Motivational inputs arise from the central management level, which is responsible for annual evaluations of teaching performance. Two central decisions have been taken at leadership level and have been implemented in a top-down process. These are the adoption of the GIL concept as the overall pedagogical framework, and the implementation of the electronic learning environment TOLEDO. Still, the decision process has been accompanied by consultations and feedback processes at intermediate and individual levels. Central support in ICT questions is basically focused on activities within the TOLEDO environment. The coordination of all activities related to these fields is carried out by the Vice-Rector within the institution.

4.3.4 Aims

Qualitative and Quantitative Definition Of Aims

The qualitative aims of eCompetence activities are seen as part of the ambitious general aim, which K.U. Leuven has laid down in its educational area that is to guarantee a high level of quality and to acquire excellence in teaching and learning. ICT is seen as one strategic tool to reach this goal and teaching as well as eCompetence of the academic teachers, is a central instrument in the whole strategic approach. In terms of quantitative goals, eCompetence and ICT use play a part insofar, as in the near future the total student number within a university will be one measurement indicator for the Flemish government for deciding upon the budget distribution between the national universities. In this context, gaining additional students through online courses might become important. Another quantitative goal is to have all courses given at K.U. Leuven integrated into the TOLEDO system by 2006. Around 75% of the courses produce online activities in TOLEDO, and there is considerable student pressure on the academic teachers to integrate interactive online elements into their courses.

The last point links to the evaluation of eCompetence-related teaching activities, which is part of the formal evaluation that students make on the teaching quality of their lecturers. In this perspective, eCompetence evaluation can be seen as a sub-set of evaluating general teaching performance. One case is reported, where students have given negative feedback on innovative teaching activities, because the *students have felt uncomfortable with the new tasks and responsibilities*, which a more student-centred, ICT-based teaching model demands from them.

Institutional Definition of Aims

Within the institutional aims, as has been pointed out already, specific eCompetence-related activities are one element in the ambition of K.U. Leuven to assure high quality teaching and to build outstanding excellence in this field.

4.3.5 Analysis of Competences

Work Definition

The approach used at K.U. Leuven to define competence is closely related to the competence-based education model, which is applied widely in the Netherlands. In the Dutch approach, *competence* is defined as a concept, which contains various elements. These elements are skills, knowledge, insights, and attitudes, which enable the actor to combine or perform specific tasks in a real context. The general definition of competence is linked to the process of innovation in education, and the role of ICT in it. In particular, the existing culture of teaching and learning is mentioned as one central influence factor for eCompetence development. In Leuven, this culture is influenced by GIL, although within GIL there is no explicit, included definition of eCompetence.

Individual and Institutional Competence/Types of Competences Gained

K.U. Leuven recognises that individual good researchers are not necessarily also excellent teachers and so the emphasis is now placed on the construction of *teaching teams* which consist of members with complementary skills and interests, mixing research and teaching closely. The teaching teams combine generally up to three teachers, teaching assistants, which have common duties in research and education, and members from the faculty support units or cells, which are responsible for the ICT aspects within the course design. This provides, potentially, a higher level of eCompetence at the group level then is necessarily the case for the individual members.

This leads to the observation, that the *competence to work in a team* is one key competence in the eCompetence area. Additionally, something which is regarded as central for eCompetence is the reflective competence of teachers with regard to their own teaching performance. This reflective competence is fostered in Leuven by micro-teaching training, student evaluation, and micro-teaching simulation sets, which have been set up by the Educational Support Unit.

Indicators for Formal and Informal Competence Development

In future, the development of a Community of Practice may provide a basis for new, innovative forms of professional development that can complement formal training. In addition, the possibility of designing training so that teachers can view programmes from the student perspective, especially when using ICT, is felt to be particularly powerful. Finally, the professional dissemination of successful ICT projects is seen as an important element in raising teachers' interest in the potential of technology to create innovative learning scenarios.

4.3.6 Summary

The eCompetence development measures at K.U. Leuven can be interpreted as a result of a longer structural and conceptual evolution of the institution in the broad area of teaching and learning. The mission statement of the university emphasises high quality teaching as one outstanding goal of K.U.

Leuven and there is documented strong leadership support for education innovation at particular times in the institution's history. GIL in particular is the key focus and is the defining aspect of the contextual basis for eCompetence development in the university.

Implementing TOLEDO has provided a fundamental driver to eCompetence and is nurtured through the Digital Chalk courses and additional, informal support at various levels within the institution. Thus, the topic of eCompetence is directly and indirectly driven forward by a complex strategy of intervention at several institutional levels, which is rooted in a historical tradition of recognised importance of teaching quality that has now been taken up and extended to the ICT challenges. K.U. Leuven, then, has taken an evolutionary approach to eCompetence, where the main drivers have been both pedagogical and technological.

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4. *ibid.*
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6. *ibid.*, p. 5-9
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21. See <http://www.kuleuven.ac.be/english/about/figures.htm>
22. See http://www.kuleuven.ac.be/english/about/mission_statement.htm
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6. Annex: Interviewed Experts, Interview Dates and Additional Documents

6.1 *Dipoli Helsinki University of Technology, Finland*

The interview took place on May 25th, 2005 by the use of Skype.

Interviewed Experts

Anna-Kaarina Kairamo

Riikka Rissanen

Documents of the Case

Transcript of the Case Study Interview

Description of the Effective Practice: http://www.ecompetence.info/form/select_print.php?view=44

Presentation Slides from Riikka Rissanen on the TieVie Case:

TieVie www-portal: <http://tievie oulu.fi/>

The Finnish Virtual University web site (in English):
http://www.virtuaaliyliopisto.fi/?node=vy_front_page_eng

6.2 *K.U. Leuven, Belgium*

The interview took place on May 25th 2005 by the use of Skype.

Interviewed Experts

Jef Van Den Branden

Prof. Dr. Wim Van Petegem

Documents of the Case

Transcript of the Case Study Interview:

Description of the Effective Practice: http://www.ecompetence.info/form/select_print.php?view=45

Presentation Slides from Jef Van Den Branden on the K.U. Leuven Case:

Mission Statement of K.U. Leuven: http://www.kuleuven.ac.be/english/about/mission_statement.htm

Facts and figures of K.U. Leuven 2004-2005: <http://www.kuleuven.ac.be/english/about/figures.htm>

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