
UNDERSTANDING THE CONCEPT OF ECOMPETENCE FOR ACADEMIC STAFF

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Introduction

This paper aims to outline current research on eCompetence in higher education. The main research focus will be on eCompetence development models for academic staff. The topic of eCompetence is closely linked to recent discussions that have evolved in eLearning on the strategic challenge to implement new technologies in a sustainable way in universities. Desideratum is the eStrategy which guides the efforts universities undertake to integrate ICT into their work processes (Duderstadt et al. 2003, Bremer and Kohl 2004). This strategic challenge reflects the situation many universities currently face in the area of eLearning (Euler and Seufert 2004).

eCompetence research represents one aspect of the discussion on the integration of new technologies in universities. Its main interest is on the role of the *human factor* in this process of technological innovation and institutional change. eCompetence is, at its core, dealing with the development of *personal* competences in the creative use of ICT. You cannot innovate in an organisation without developing the competences of the members of that organisation. In current human resource management models, the individual competences of the employees are defined as the *most limited* resource of the organisation (Albrecht 2005, Erpenbeck 2004).

Academic staff play a key role in education innovation. They are the "process owners" or "gatekeepers" of the research and teaching activities within the university (Kerres, 2005). Higher education teachers define and plan the (subject) curricula. Digital tools offer a wide range of options to enhance teaching and learning in universities, if they are embedded into innovative pedagogical concepts, but the design of innovative teaching scenarios that include and make effective use of them demands the development of new competences for academics. Staff members need to be aware of, and understand, the innovative potential of the technology that is available for their research and teaching (Salmon 2004) - they need to develop specific, appropriate and new competences to cope with the technological challenges in their workplace.

1. What is Competence in the Higher Education Context?

The concept of competence is widely used across many disciplines and contexts and is problematic because it has many varied meanings and interpretations. Indeed, its interpretation is also dependent on cultural, linguistic and national circumstances. For example, in some cases it is routinely used (perhaps incorrectly) in the description of skills training processes, but not necessarily in professional development or higher cognitive areas. To clarify the term for our present purposes, it is appropriate to narrow our discussion to the particular context of higher education. A first approach may be inferred from the work of Franz Weinert, who is based in the psychological field of competence research. Weinert tries to bridge the gap between the psychological and pedagogical concept of competence on the one side and sociological concepts on the other side. He defines competence in human and social sciences as "...a roughly specialised system of abilities, proficiencies, or skills that are necessary to

reach a specific goal. This can be applied to individual dispositions or to the distribution of such dispositions within a social group or an institution" (Weinert 2001). A substantial element of the competence definition is the relation of competence to performance, which links competence to action in social situations (Chomsky, 1980).

Competence is not limited to the acquisition of skills. Competence is dealing with the ability to handle challenges that occur in a specific situation in an appropriate way. Competences are expressed and demonstrated in an act of performance and they are always related to a specific social context. Van der Blij defines competence with a focus on performance as "... the ability to act within a given context in a responsible and adequate way, while integrating complex knowledge, skills and attitudes" (Van der Blij, 2002). The definition of Van der Blij seems to integrate consistently the key components that a theoretical concept needs to include for discussing the challenge of competence development and management in the context of higher education.

COMPETENCE DEFINITION		
COMPONENTS	CHARACTERISTICS	LEVELS OF OBSERVATION
individual dispositions ↓ to act in	abilities, aptitudes, motivations attitudes, values	psychological theory
↓ context-bound situations ↓ according to	complex, undefined, not routinised dynamic	action theory
↓ consensual standards	appropriateness, responsibility	sociological theory

Figure 1: Competence Definition

We have tried to represent the various components in a table/chart that subdivides the key components of the competence term, assigns a range of characteristics to these components and allocates them to three levels of observation.

By detailing the key components in this way, the model visually differentiates the level of competence that represent the dispositions of the acting individual, the context level of performance and the situational context level of standards for "adequate"(or appropriate) behaviour (defined by social consensus). The characteristics represent a set of relevant influence factors in the competence - performance process. The "levels of observation" demonstrate the predominance of psychological theory approaches to competence on the individual disposition level, of sociological theory approaches on the contextual level of relevant standards and of the merging of both domains in the middle level.

The iterative process, in which such factors inter-relate in the development of competence, where each stage builds upon what has gone before, is best illustrated in the form of a series of steps, or "stairway" as in figure 2. The process begins with the acquisition of *information*. Information that is connected in a network of meaning leads, in the second step, to *knowledge*. If this knowledge is applied to a specific context, it can lead to *ability*. The ability needs to be combined, in the third step, with a specific *attitude* (which includes values and motivation) in order to result in an act of *performance*. If, in the fourth step, the action is consistent with given standards of *adequacy* or *appropriateness*, this adequate action leads to *competence*. In the final step, the competence, combined with a certain responsibility, will result in professionalisation.

These two illustrations represent the approach to the concept of competence that we propose for our current study: the educational processes in higher education. Consequently, we will try to build on the theoretical implications of this model of competence, relating it to our interest in “eCompetence.”

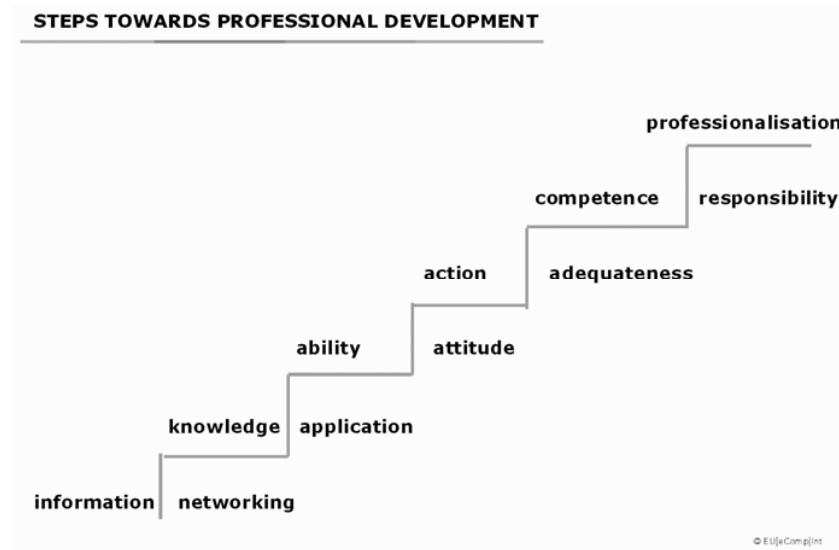


Figure 2: Steps towards professional development

2. Draft Model for eCompetence of Academic Staff

The main challenge for a theoretical discussion of eCompetence is to relate the general term of competence to the specific "eContext" - the electronic context that is gradually evolving and changing the work culture in higher education. The electronic work environments in universities make new, innovative formats for teaching and learning activities possible, to which eCompetence needs to be applied. If academic staff members gain an understanding of the impact of technologies on their key work processes, they can use technology to extend, re-work and innovate in their research and teaching contexts (Graves 2001).

Then again, the organisation as a whole has to enable and encourage the development of competence in its individual members, if it wants to act strategically in the field of ICT-driven innovation. There is a strong inter-relation and interdependence between the individual and organisational level of competence development (Weinert, see above). You have to analyse the organisational context in which specific needs and challenges on the use of ICT are defined and in which individual competence is developed. This is the reason why we differentiate in this paper between *individual* and *organisational* eCompetence.

Although eCompetence has a technological focus, in fact, the required competences for academic staff are not limited to the "e", the electronic component of the term eCompetence. It is not primarily dealing with the level of expertise of the individual teacher to handle specific software applications. The eCompetence concept has to be interpreted in a wider mode. It also concerns the educational competences require to make appropriate judgements on the effective integration of ICT into the educational context and processes (Stalmeier 2005).

Thus our conception of eCompetence is that it is the ability to use ICT in teaching and learning in a meaningful way. Whilst there is a distinction between eCompetence at the individual and institutional levels, both describe the ability to successfully use eLearning technologies in routine educational practice.

For example, the personal eCompetence of an individual academic teacher describes his or her ability in using ICT in their teaching and course delivery. Institutional eCompetence describes the structures, processes and policies in place, by which a university aims to embed the ICT use into its core tasks of research and education. Based on this argument, we will, in the next step, focus on the individual eCompetence concept as a theoretical reference framework for the analysis and interpretation of change processes in higher education that are sparked by the innovative potential of technology.

Considering closer the structure of the individual eCompetence concept, one can identify the following key components: the university teacher (who bears the competence as his or her general cognitive disposition to act) and the teaching and learning scenarios (which embed or rely on the use of ICT as the particular context in which the performance of the university teacher is situated).

The first key component is the competence of the individual university teacher. Linking the dispositional dimension (the individual prerequisites of a teacher to act in an appropriate way) and the performance dimension, Erpenbeck and Heyse (1999), have constructed a model that defines and integrates personal, social and communicative, methodical and subject-specific competences into an overarching *action* competence (Erpenbeck und Heyse 2004), which we apply to our eCompetence concept.

The second key component is the teaching and learning scenarios which embed or rely on the use of ICT as the particular context in which the performance of the university teacher is situated. We like to apply the term *eContext* to this use of ICT in the range of possible teaching and learning scenarios of the university teacher. eCompetence itself can only be developed in any meaningful way if it is recognised that it is situationally specific and thus we should try to identify the important contextual variables.

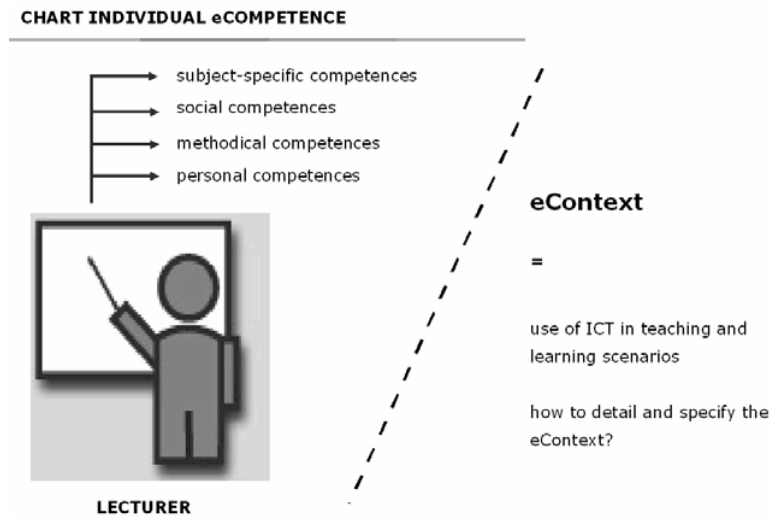


Figure 3: Chart of individual eCompetence

Our approach is founded on pedagogical models that have emerged from educational research in curriculum design and teaching approaches in higher education. The premise is that the university teacher needs to select from a range of possible approaches to teaching and learning, that method or set of methods which is best suited to the course they intend to deliver, or the teaching scenario in which he or she will interact with the student group (Schneckenberg and Wildt 2006).

Only when the teacher has chosen the appropriate teaching and learning model can a selection of the most appropriate ICT tools be made. The ICT options that are available for the teacher cover a broad spectrum from simple electronic documents (e.g. pdf files) to highly complex electronic learning

environments (e.g., virtual classroom applications). The main point in this argument is the assumption that the university teacher selects the ICT options only *after* the pedagogical model for the specific teaching performance has been chosen. The economics lecturer (for example) that needs to cope with a mass lecture in front of a thousand students will have very different pedagogical concepts and ICT options in mind compared to the philosophy teacher (for example) that plans a course with a small work group.

We can combine the two dimensions of pedagogical competence and context in a *synergy model* (see figure 3) for individual eCompetence. There is, however, one additional key component to be added; otherwise the model will not be fully self-consistent: this is the *eCompetence of the students* that interact with the teacher in the specific teaching and learning scenario. Each student possesses a specific eCompetence on his or her own, which can be conceptualised in a similar way as we have inferred the eCompetence of the academic teacher. The main difference between the teacher and the students is not contained in the cognitive dimension, but in the *performance* dimension. The primarily goal of the teacher is to teach, the primarily goal of the student is to learn. It has to be pointed out, though, that the efficiency of a specific course setting is largely dependent on the degree in which the competences of the teacher and the competences of the learner interlink in the teaching and learning processes.

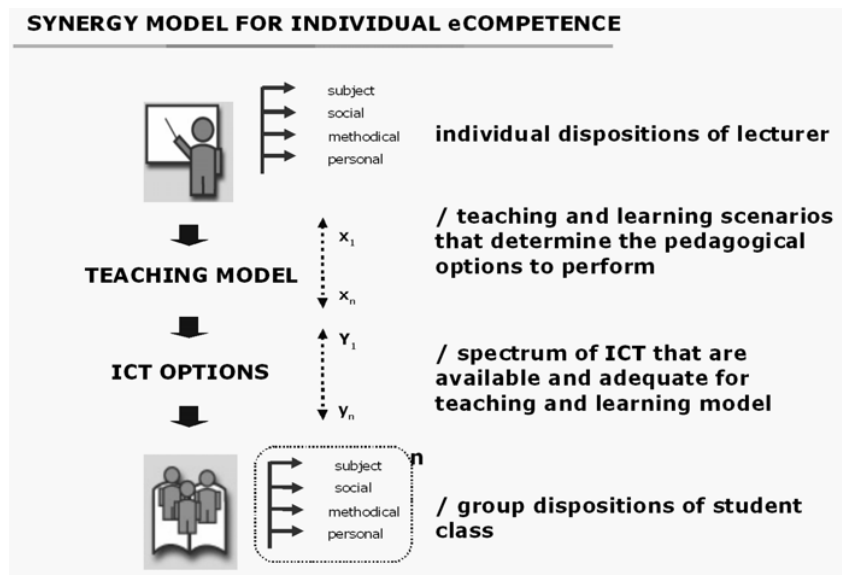


Figure 4: Synergy model for individual eCompetence

So the roles in the interaction between teacher and student are situated at opposite sides of the teaching and learning process, but nonetheless (need to) complement each other. The personal eCompetence of the individual student thus describes his or her ability in using ICT in their learning activities. Further, of course, the combined eCompetences of the students in a particular group will construct a collective disposition towards the effective use of the technologies to support their learning.

3. Conclusions

We have argued in this paper that the general concept of competence is used in many different and inconsistent ways in the research literature. A meaningful definition of the competence term can only be reached, when it is applied to, and embedded into, a specific context. In the case of our eCompetence research this context is set by the conditions in which educational processes in higher education take place. Subsequently, a concept of competence that is appropriate for our research

context has been introduced and its main components and influence factors have been detailed. The resulting competence concept has been applied to the specific eContext (which we introduced as the electronic context that is gradually evolving and changing the work culture in higher education).

The construction of the eCompetence concept has differentiated between the *individual* and the *organisational* level: the individual level representing personal competence development of the academic teacher and institutional competence as the structures, processes and policies in place, by which a university aims to embed its ICT use. We have assumed that there is a strong interrelation and interdependence between these two levels.

In the last section we discussed in more detail the structure of individual eCompetence, considering its inherent key components: individual teacher, pedagogical model, ICT options and student group. Finally, we have merged these components into a synergistic model for individual eCompetence. The paper has only presented a brief summary of the key concept and the purpose of the European eCompetence Initiative's research activity is to explore further the complex, but vital, organisational level of eCompetence.

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