Summary Master Dissertation

Digital Competence-based Assessment Frame

A conceptual design

Master of Science in E-Learning, Multimedia & Consultancy

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Manuel Castells

The new learning is oriented toward the development of the educational capacity to transform information into knowledge and knowledge into action.

(USA-2001)

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ABSTRACT

This master's dissertation aims to design a concept of a Digital Competence-based Assessment Frame (DCAF) in Higher Education. In setting this Frame, attention will be paid to the following subjects:

- Competence-based education
- Student-centred/demand-centred learning
- Assessment
- Project-based education
- Computer Supported Collaborative Learning

The EA Model (Educational Analysis Model) will be instrumental both in describing competence-based learning and in constructing the assessment frame.

This EA Model came into being during the preliminary investigation of this study. When the outlines of the object of study were drawn, three aspects gave shape to EA cube as a model, namely, level of approach, individuals involved and processes within the educational environment

The concept of the DCAF as developed in this dissertation aims to define the functional requirements for the DCAF and its implementation. This study has been done at the Saxion University of Professional Education, and within the Deventer School of CII in particular.

KEY WORDS:

Competence-based Learning, Assessment, competence-based assessment, student-centred learning, assessment portfolio, digital assessment

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THE OBJECT OF STUDY

This study is a first attempt to define the functional requirements to be met by a Digital Assessment Frame. This study was done from a perspective of developments in Higher Education towards competence-based learning and assessment of independently learning students. The DCA Frame was developed and realised specifically within the courses Information Management (BI) and Information Service- and Management (IDM) of the Saxion School of Communication, Information Technology and Information Management in Enschede, Deventer and Apeldoorn.

The courses BI and IDM introduced competence-based learning in 2003. This introduction ignited an educational reform process. The instructive nature of lessons and practicals is disregarded more and more, whereas coaching of student groups around a professional semester theme prevails.

This study aims to develop a concept for a DCA Frame, which visualises testing and assessment in order to guarantee the personal learning process of a student within a changing learning environment.

METHOD

The following methods and techniques have been used to describe the concept of a DCAF sytem:

- Secondary literature was consulted;
- A case study was done of a previous project involving Route Assessment System within the Deventer School of CII;
- Several persons considered being experts in the professional field were interviewed.

The results were processed in the EA Model, the Educational Analysis Model (De Vries, 2005), which represents the learning environment in a cube diagram. The EA Model is tripartite:

- Approach levels: Macro – Meso – Micro   Levels
- Persons involved: Student – Lecturer – Supportive Personnel   Participants
- Processes: Coaching – Learning – Assessment   Processes

The EA model serves as a framework in which the requirements for a DCA frame take shape.

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FOCUS

Setting up the requirements for a DCAF involved an explorative/qualitative research method and can therefore be seen as an Extended Curriculum Development project. Three research questions were formulated that constituted the focus of this study:

- On micro level, how can a student-centred assessment process be digitally realised; and how should the roles of lecturers and students come into the conceptual model; and finally, how should a course implement this process?

- On meso level, how is the assessment process to be supported and facilitated in order to register an actively and collaboratively learning student's development in informational records and systems?

- On macro level, how should a guarantee as towards the quality of student-centred learning be defined within the frames of a legislative policy?

EA MODEL

The EA Model is the framework describing the very aspects of the learning environment which define the context of the DCA Frame. The EA model, then, deals with several participants, such as the students, the lecturers and supportive personnel. Further, three processes can be distinguished, namely, coaching, transfer of educational content, and testing and assessment. According to a sociological approach, three levels are to be discerned in an educational organisation and its environment:

- on the shop-floor, interaction between participants takes place on micro level
- on meso level, it is of major importance for matters to be organised adequately throughout the course
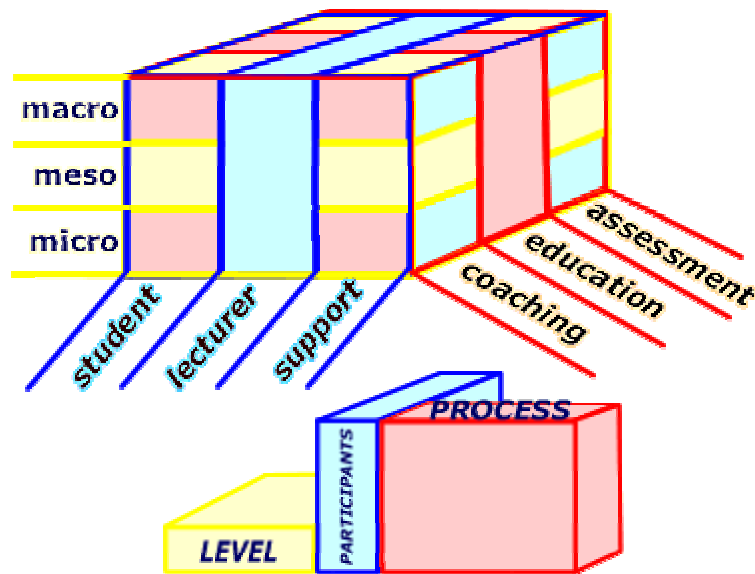- a civil organisation usually certifies a qualification on macro level.

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Diagram 1: Educational Analysis Model – EA Model (De Vries, 2005)

CONTEXT

Considering the reforms in Higher Education and their social origins, (we see that more flexible and broadly competent professionals should be supplied by educational organisations; On a European level this can partly be realised by introducing the BaMa structure – the Anglo-Saxon educational model - for all member states of the EU. In this way, the disappearing borders within the EU as well as the debate about the connection between education and job market are anticipated. From a bird's eye view we can distinguish several parallel paradigm shifts:

    From an industrial to an information society

    From old reproductive learning to new constructive learning

    From lecturer/offer centred to student/demand-centred

    From instructive transfer to knowledge acquisition

    From testing subjects separately to an integral assessment focused on profession

    From Face-to-Face (F2F) to Computer Mediated Communication (CMC)

    From closed digital applications to an open and flexible learning environment

    (Dochy & Bouwens, 1992, Kayzel, 2004, Hoeksema, 2002)

The reforms in the educational field are called "The New Learning", and can be specified as "the four Cs listed below:"

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- Competencies: the student works independently and tries to acquire his professional domain competencies;

- Constructivism: it's the student himself who constructs and expands his knowledge, capacities and professional patterns of behaviour;

- Collaborative: students collaborate on professional tasks and products in an authentic and equal learning environment;

- Coaching: the lecturer's roles come out well; he coaches a team of collaborative students and supervises each student's personal learning process at the same time.

(Jochems, Merriënboer, Koper en Bastiaens, 2005)

A COMPETENCE-BASED CURRICULUM

The framework of the EA Model defined the elements relevant to competence-based Higher Education.

LEVELS

The learning environment in Higher education was described using three approach levels: macro, meso and micro. The broader context of political and social developments on macro level was a first point of attention. Mentioned was the European unanimous policy laid down in Bologna, which decided for the introduction of a new Bachelor/Master model equal for all member states. Ever since the Bologna meeting educational reforms have started in all European countries involved. In terms of Dutch education policy, this implies all courses have had their quality evaluated and accredited by civil institutions

On meso level we see that Saxion University decided to set up a competence-based curriculum along the lines of their innovated education policy laid down in 2000. In the new curriculum the concept of actively and independently learning students is pivotal. The newly developed model of the Personal Learning Process (Du.: PLW) serves to facilitate the students' demand-centred learning. On micro level, the Deventer School of CII attempts to realise the PLW in a thematic, project-centred learning environment, where students can acquire their competencies by working on tasks similar to the ones they will encounter in future professional situations.

PARTICIPANTS

Competence-based learning brings along several changes for those involved. As a demanding client, the student is expected to give shape to his personal learning needs. In this, a lecturer, who has transformed from instructor into coach, will guide him. ICT supporting tools will be

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used progressively more; implying, a lecturer's didactical role will change accordingly. In order to make these processes possible, the roles of supportive personnel change as well. Previously, support functioned as a complementary means for the lecturer in his role as instructor, and educational tools and accommodations were taken care of by non-educational assistants. Nowadays, it is the student who needs to be facilitated. This means the student must be provided for sufficiently, so that he will be able to set up his education the way he wants it. The latest ICT tools and applications, then, will have to be focused on the demanding student.

PROCESSES

As mentioned in the section Context, processes in competence-based learning take a different course from the old way. Lecturer's roles will change and gain additional aspects. Apart from being a subject teacher, a lecturer will now have to assume several other roles, for instance, coach of a student's personal learning project and E-moderator.

A learning environment must meet the requirements of the students' personal learning processes more constructively; this means utilising more differentiated educational methods. More often than not, students will collaborate in varying groups. Therefore, ICT supplies are necessary to enhance digitally supported collaborative learning. If the student has the opportunity to choose the competencies to be acquired in the course of his personal learning process, assessment will have to be geared to his choices. As a consequence, various forms of evaluation will be used for assessing his competencies.

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THE DCAF CONCEPT

The Digital Competence-based Assessment Frame can be seen as a structure which translates the processes explained in the EA Model - coaching, Education and assessment – into a concept.
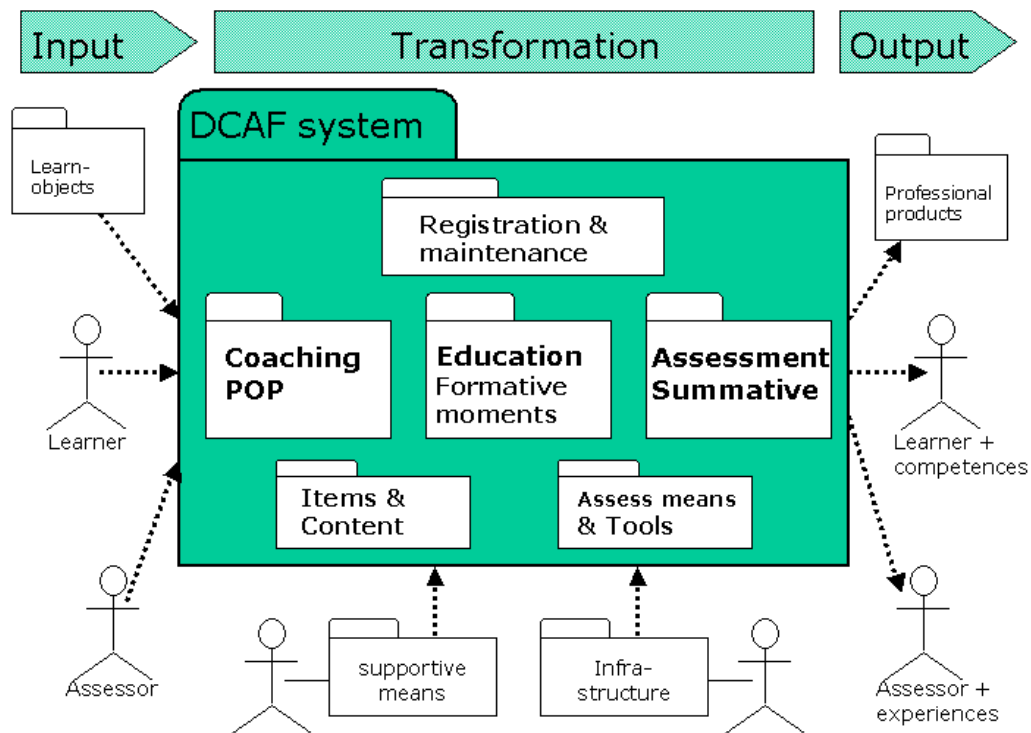
The DCAF concept has been represented as a system similar to Koper's domain model for e-learning.

Koper states it is urgent to have a clear perception of where and how the model is used in order to understand e-learning. For education, the model should be a system supporting the 'primary educational functions' (Koper, 2005). This DCAF systems aims to visualise the functional requirements for the concept.

The student sets up his Personal Development Plan at the start of his course. He decides which competencies he wants to develop per semester. It is these competencies the student will be evaluated on, which is confirmed by the assessment frame.

The student himself decides what kind of learning environment will be best suited for him to develop the competencies he selected. He may opt for working on professional tasks/products in an educational workshop (Du. OWP), or choose for an external company The student is

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focused on gathering evidence which indicates he acquired the competencies defined in his Personal Development Plan. Formative instruments to be used may include, for instance: diagnostic knowledge tests, 360-degrees-feedback questions regarding actions, and conditional testing of performance tasks/products. RAS, the Route Assessment System, may serve as an instrument to gather the formative feedback moments. Eventually, all kinds of formatively tested files can be collected in a digital portfolio.

As soon as the student thinks he is able to meet the requirements of his selected competencies, he can request an assessment. Nature of his competency and/or professional product will determine the kind of assessment to be applied, such as there are, an overall test, a simulation, or an oral assessment of his portfolio. Reliability of the latter may be improved by means of the Protocol Portfolio Scoring.

CONCLUSIONS

The digital consequences of the DCAF Frame have been specified as functional requirements. Other points of interest emerging from the study can be mentioned:

The EA model may be used as a model describing a learning environment. It served as a thread within this dissertation. It would be advisable to extend investigations of the EA model and explain interrelations between the cube diagrams in terms of transfer processes.

Realisation of the DCAF system into a concept positively defined the successive processes of Coaching – Education – Assessment as a logical sequence.

With a view to the latest developments in e-learning and collaborative learning, the functional requirements as described in the DCAF Frame might be extended to the Sakai open learning source environment.

The suggestions above may generate new projects, which might further develop this explorative DCAF system.

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Johannes de Vries, August 2006

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