Manual on EFMD CEL Quality Criteria

Technology-Enhanced Learning Accreditation for ICT-based learning programmes
Manual on
EFMD CEL Quality Criteria
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1 Introduction

1.1 Structure of EFMD CEL Documents

1.1.1 Overview of available EFMD CEL documents

EFMD CEL makes use of a set of documents that are briefly described below. The following illustration shows all the documents which are publicly available to improve the transparency and comprehensibility of the EFMD CEL quality framework.

Fig. 1: Structure of the EFMD CEL documentation explained in this guide

1.1.2 EFMD CEL Flyer

**Contents**

The EFMD CEL flyer provides a brief overview of EFMD CEL’s goals, eligibility criteria and quality Accreditation process. The flyer contains the essential messages of the EFMD CEL quality approach.

**Function**

- Communicating EFMD CEL’s goals, preconditions and value propositions in a short and concise way to the interested public.
- Contacts and Addresses
1.1.3 EFMD CEL Introductory Guide

Contents

The EFMD CEL Introductory Guide provides a comprehensible overview of the EFMD CEL quality framework. As such, a system of quality improvement grounds its own quality on criteria which are theoretically sound and supported by empirical evidence. For that reason, the relevant literature was evaluated and subsequently a Delphi-study was conducted at the Swiss Centre for Innovations in Learning (SCIL). Based on interviews with 25 experts in the field of technology-enhanced learning, a set of criteria could be isolated and clustered into five dimensions:

- **Pedagogy** covering all aspects of the learning and teaching process. They address questions like: What type of learning environments does the programme consist of? What is the (added) value of those learning processes supported by technology?
- **Economics** involving all facets related to efficiency in the use of resources. The main question is: Are the resources in terms of funds and competencies efficiently used?
- **Organisation** dealing with the question: Are the organisational measures in running the programme adequate to meet the programme’s underlying objectives?
- **Technology** addressing the question: Is the functionality of the technology implemented adequate to meet the programme’s underlying objectives?
- **Culture** looking into the question: Are the cultural factors of change and innovation considered adequately?

These five dimensions comprise the main categories of a systemic view on technology-enhanced learning quality development within programmes.

EFMD CEL Accreditation is composed of several distinct stages. The EFMD CEL brochure describes this process, shows the way in which the different stages are linked and provides a brief description of each stage.

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Function

The EFMD CEL brochure provides

- detailed information on EFMD CEL’s quality framework,
- the stages of the EFMD CEL quality evaluation process,
- the policies for Accreditation and re-Accreditation, and
- detailed information on costs and benefits

Target groups

- Interested programme executives
- Interested faculty and staff

Source

The most recent copy of this document is available on:


1.1.4 EFMD CEL Quality Criteria Overview

Contents

There are two separate documents available, one showing only the quality criteria and the other providing a more detailed view by supplementing the criteria with the corresponding performance indicators and EFMD CEL standards that are relevant for quality evaluation.

Function

- Overview of the EFMD CEL quality criteria, performance indicators and EFMD CEL standards
- Operationalisation of the quality criteria by introducing the indicators and standards

Target groups

- External EFMD CEL auditors
- Self-Assessors
- Interested parties
- Researchers

Source

The most recent copy of this document is available on:

http://www.efmd.org/CEL/criteria-overview and
http://www.efmd.org/CEL/criteria-indicators-standards

1.1.5 Manual on EFMD CEL Quality Criteria

Contents

There are two purposes for the “Manual on EFMD CEL Quality Criteria”. On one hand, it provides the underlying empirical and theoretical substantiation
of the quality criteria which allows the end users to better understand the meaning and relevance of specific quality criteria. On the other hand, the manual operationalises the quality criteria into indicators and EFMD CEL standards. With this operationalisation, the manual closes the gap between the theoretical quality framework and the forms/guidance notes for those executing the quality evaluation.

**Function**
- Reflection and foundations in terms of references to relevant theoretical and empirical findings
- Operationalisation of the quality criteria by introducing indicators and standards

**Target groups**
- External EFMD CEL auditors
- Self-Assessors
- Interested parties
- Researchers

**Source**
The most recent copy of this document is available on:
http://www.efmd.org/EFMD_CEL/Manual_Quality_Criteria

### 1.1.6 EFMD CEL Application Data Sheet

**Contents**
The “EFMD CEL Application Data Sheet” must be completed properly to begin the EFMD CEL eligibility check. The Data Sheet requires the programme management to provide crucial information on the subject of the programme, its length, the amount of technology-enhanced learning within the programme and the number of times the programme has already been run. This information allows the verification of whether or not a specific programme is eligible for EFMD CEL Accreditation. Hence, the EFMD CEL Application Data Sheet serves as an official application form that must be signed by the responsible programme manager to acknowledge approval of the programme duties, the EFMD CEL terms and conditions, and the payment.

**Function**
- Eligibility check to enter the EFMD CEL Accreditation process
- Acknowledge approval of the EFMD CEL terms and conditions
- Starting the EFMD CEL Accreditation process

**Target**
- Self-Assessors
1.1.7 Guide to Self-Assessment

Contents The Self-Assessment phase is an important step in the EFMD CEL Accreditation process. It provides an assessment of the programme’s strengths and weaknesses relative to the EFMD CEL quality criteria and to its own mission and objectives. This comprehensive analysis provides the basis for the external EFMD CEL auditors. EFMD CEL provides a set of guidelines, recommendations and forms for the programme’s self-assessors.

Function The EFMD CEL Guide to Self-Assessment is designed to facilitate and guide the process of Self-Assessment as effectively and efficiently as possible.

Target groups
- Self-Assessors
- Programme managers/directors
- Audit Team

Source The most recent copy of this document is available on: http://www.efmd.org/EFMD CEL/self-assessment

1.1.8 EFMD CEL Guide for Audit Team Visit

Contents The “EFMD CEL Guide for Audit Team Visit” provides information on organising and planning the Audit Team Visit. It includes a suggested schedule for the visit including the topics, expected attendees and what you should do as a host of a successful Audit Team Visit.

Function The “EFMD CEL Guide for Audit Team Visit” is designed to facilitate and guide the organisation of the Audit Team Visit as effectively and efficiently as possible.

Target groups
- Audit Team
- Self-Assessors
- Programme manager

Source The most recent copy of this document is available on: http://www.efmd.org/EFMD CEL/application
1.1.9 EFMD CEL Guide for Auditors (internal use only)

**Contents**

“EFMD CEL Guide for Auditors” provides the instruments, forms etc. for guiding the assessment procedure.

**Function**

The “EFMD CEL Guide for Auditors” is designed to facilitate and guide the process of Audit Team Review as effectively and efficiently as possible.

**Target groups**

Auditors/Audit Team

1.2 Purpose of this guide

The purpose of the Manual on EFMD CEL Quality Criteria is two-fold: on one hand, it provides an empirical and theoretical substantiation of the quality criteria which allows the end users to better understand the meaning and relevance of the specific quality criteria. On the other hand, the manual operationalises the quality criteria into indicators and EFMD CEL standards. Through this operationalisation, the manual closes the gap between the theoretical quality framework and the forms/guidance notes used by those executing the quality evaluation. The following illustration shows the two purposes of this manual.
By providing the substantiating background of the EFMD CEL quality criteria, this manual raises a scientific dialogue on the quality criteria and standards used and thereby establishes and improves the comprehensiveness and acceptance of the EFMD CEL quality criteria.

1.3 Definitions and terminologies

This chapter deals with the terminologies and definitions used in this guide. The wide variety of existing approaches, methods, concepts, and terms in the field of quality management leads to the conclusion that a common vocabulary is a pre-condition for any substantial discussion. To ensure that all readers are able to understand the wording in this guide, the essential definitions and eligibility criteria of the EFMD CEL Quality Framework as well as the underlying meaning of the essential terminologies are briefly stated. The definitions and terminologies appear in alphabetical order.

Programme  A “programme” is more than just an technology-enhanced learning medium (e.g. CBT, simulation tool), an event of e-Communication (e.g. e-Lecture, discussion forum, virtual classroom session) or a learning sequence of short duration. All these elements mentioned may be part of the programme. A programme in terms of this concept should meet the following criteria in order to be eligible for EFMD CEL Accreditation:

- The programme is related to management education.
- The programme corresponds to the equivalent of at least 100 hours of candidate learning effort (defined by educational managers, not necessarily contact hours).
- The programme ends with an assessment, evaluation, examination or the like.
- The programme operates on a durable basis. This is in principle regarded to be the case if the programme has at least been running at least once. If the programme itself covers a period of more than 12 months, there should be at least 24 months of continuous operation of the programme before it may be certified.

Technology-supported  A programme is to be regarded as “technology-supported” if a minimum of 20 % of its overall duration is delivered by technology-enhanced teaching and learning methods. This is the case if one of the following two requirements are fulfilled:
- Interactive multimedia: the programme utilises one or more media types other than printed text or recorded lecture material.

- Network interaction: the programme requires the use of a network to provide interactivity between a student and stand-alone content or to connect different students to an e-Tutor / e-Moderator or each other.

Eligibility Criteria

Based on a set of EFMD CEL proprietary eligibility criteria, the EFMD CEL Executive Office formally decides whether a specific programme can be evaluated by the EFMD CEL quality criteria and hence can apply or not for EFMD CEL quality Accreditation.

Quality Management

Quality management denotes all the activities of the overall management function that determine the quality policy, objectives and responsibilities, and their implementation by such means as quality planning, quality control, quality assurance and quality improvement within the quality system (ISO 8402:1994).

Quality Evaluation/quality Assessment

Quality evaluation or quality assessment is understood as the general operational accomplishment of the quality policies and/or processes as defined by a specific quality management system (see Dubs, 2003, 9). It is based on specific quality criteria and is carried out by different evaluation methods.

Quality Criteria

Quality criteria define the specific areas of evaluation that build the basis for the quality Accreditation. To improve readability and comprehensiveness, the EFMD CEL criteria are formulated in a general manner and need further specification from the quality indicators and standards.

Quality Indicators

Quality indicators put quality criteria into operational terms. Hence, indicators allow auditors to focus on the relevant variables when evaluating abstract quality criteria constructs.

Quality Standards

Standards are requirements to be achieved by the evaluated programme. Standards can be formulated for quality indicators or criteria if the criteria are precise enough. As a consequence, the auditors have to judge the performance of the evaluated programme against predefined standards. EFMD CEL standards are at least minimum standards that show a binary ‘fulfilled’ or ‘not fulfilled’, but also may specify different levels of achievement. For example, without specific standards, the quality criteria statement “Instructional materials are re-
viewed regularly to ensure they meet programme standards” does not indicate whether a particular level of functioning is best, just adequate or inappropriate. Either quantitatively or qualitatively, it is essential to spell out the characteristics of every dimension of the performance for each aspect of the evaluation. Otherwise, as Stella & Gnanam correctly point out, “the differences between ‘we also do it’ and ‘we do it well’ may become ambiguous and affect the objectivity of assessment.” (Stella & Gnanam, 2004, 154)

### 1.4 Reasoning and reflection on EFMD CEL quality criteria

The EFMD CEL quality Accreditation programme grounds its own quality on criteria which are theoretically sound and supported by empirical or theoretical evidence and/or argumentative reasoning. Hence the relevant literature was evaluated and is briefly discussed in the reflection part of each quality criteria cluster. Based on this analysis, the criteria and evaluation types are set. In order to make the criteria evaluation more transparent to the relevant stakeholders, the standards for each criterion are defined. Where criteria allow or imply that different levels of achievement are being evaluated (mainly where objective standards may be set), the standards are broadened by a more detailed set of indicators that allow the peers and auditors to evaluate the criteria more adequately and homogeneously. As opposed to many other criteria lists that are currently available, the EFMD CEL criteria explicitly reflect the major interdependencies between them.

### 1.5 Overview of the description framework

The challenge related to quality assurance and the quality accreditation of technology-supported education programmes lies in identifying the suitable criteria and standards which will make the assessment clear to the Accreditation body, the persons responsible for the programmes requesting Accreditation and the other stakeholders interested in the Accreditation results.

EFMD CEL draws on a well-defined set of evaluation types and methods to raise each instrument’s potential and advantage in order to evaluate the quality of a programme as efficiently, effectively and adequately as possible. Additionally, each EFMD CEL quality criterion is specified and operationalised in respect to the appropriate indicators and EFMD CEL standards.
## Quality Criteria

<table>
<thead>
<tr>
<th>#</th>
<th>Quality Criteria</th>
<th>Method of data-collection</th>
<th>Indicators of performance</th>
<th>Standards used by the auditors for quality evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR1</td>
<td>The objectives of the programme are explicitly stated and consistent with and integrated into an overall strategy of institutional development and quality improvement.</td>
<td>Doc</td>
<td>Documented (strategical) objectives of the programme.</td>
<td>Explicitly stated, meaningful and comprehensible objectives.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA</td>
<td>Reflections on how programme objectives are set up and who is in charge for their regular review and the regularity of the review process.</td>
<td>Explicit process that is defined and operational, Objectives should be reviewed at least every two years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reflections on the consistency of the programme objectives with the institution’s development and quality goals.</td>
<td>Comprehensible and convincing consistency.</td>
</tr>
</tbody>
</table>

### 1.6 Evaluation types

**Documentation [Doc]**

Where it is assumed that a high quality programme can draw on existing documentation (e.g. programme goals, descriptions of the targeted learners) and where these pieces of information are evaluated directly by the Audit Team, the programme management is asked to provide (digital) copies of the original documents. These documents should not be commented unless other instructions are provided in the respective evaluation task. However, it is always important that the context, status (is it a draft or an operational and binding document?) and authorship of the provided documents are comprehensibly declared.

**Self-Assessment [SA]**

Some quality criteria require a comprehensive reflection (self-evaluation) by the Accreditation candidate on performance and current achievements in addition to or instead of documentation. This self-evaluation particularly asks the Accreditation candidate to address precisely asked evaluation questions and assess their own performance against the set EFMD CEL standards. In combination with the required documentation, the EFMD CEL auditors will subsequently not only appraise the comprehensibility of the self-evaluation but also the consistency of the outcome of the self-evaluation and the documents.
Audit Team, Student Interviews [AT (SI)]

Taking the learners’ perspective on the different quality aspects of technology-enhanced educational programmes is particularly important for EFMD CEL. As the physical presence of the learners is no longer required in technology-supported programmes, it cannot be assumed that the learners will be on-site during the Audit Team Visit. Hence student interviews consist of phone conversations done with randomly selected learners and based on a semi-standardised questionnaire that includes all the quality indicators in this manual indicated with AT (SI).

Audit Team Visit [AT (V)]

All the other stakeholders (teaching staff, programme management, authors, tutors, and administrative staff) are interviewed during a 1 ½ day on-site visit of the EFMD CEL Audit Team. There are two main purposes for this on-site visit: on the one hand, it serves as a primary source of information for the auditors to gather new insight in the programme and its contexts. On the other hand, it allows the auditors to validate the self-assessment results, the documentation provided and the results of the student interviews by talking with the different stakeholders and comparing their perspectives and views on the different quality aspects.
1.7 Overview of EFMD CEL-Criteria

Programme Profile

Pr1 The objectives of the programme are explicitly stated and consistent with and integrated into an overall strategy of institutional development and quality improvement.

Pr2 The target population of the programme is clearly defined.

Pr3 The staff designing, managing, running and evaluating the programme (e.g. programme managers, authors, e-tutors, e-moderators, quality managers) must be appropriately qualified for conducting their responsibilities.

Pr4 Students are provided with relevant programme information available prior to the start of the programme

Pedagogy

PE1 The learning objectives of the programme are stated, following the respective professional pedagogical standards.

PE2 The pedagogical and strategic (added) value of technology-enhanced learning within the programme is explained.

PE3 The structure of the programme allows for a diversity of learning and teaching methods.

PE4 Student interaction with teaching staff, other students and/or interactive learning software is an essential characteristic of the programme and is facilitated through a variety of ways.

PE5 Content making use of technology-enhanced learning is integrated in the curriculum and the assessment system of the programme.

PE6 There are principles / guidelines regarding minimum standards for course development and design as well as for the use of third party contents.

PE7 Instructional materials (e. g. educational software) are reviewed periodically to ensure they meet the programme objectives and standards.

PE8 Feedback to student assignments and questions is constructive and provided in a timely manner.

PE9 The relationship between learning objectives, assignments and assessments follows a coherent concept.

PE10 Assessments follow respective professional standards and are valid to the learning objectives.
Economics

E1 Institution should demonstrate that the level of overall resourcing is appropriate to achieve the programme objectives.

E2 There is a balance between running and advancing the programme, especially concerning the technology-enhanced learning components within it.

Technology

T1 The selection of technologies is based on appropriateness for the pedagogical concept and in respect to the students and teaching staff.

T2 There is an IT-strategy regarding the implementation of technology-enhanced learning, stating the currently used technology, its maintenance and considerations for future advancement.

T3 The reliability of the technology delivery system is monitored and documented. Service level agreements for the hardware and software on reliability are in place and operational.

T4 Educational technology delivery follows best practice recommendation concerning usability and accessibility.

T5 The deployed technology allows future reuse of content and information and supports sustainable development.

Organisation

O1 The institution is able to demonstrate the existence and operation of the necessary infrastructure and support for the programme.

O2 There is a policy of competency development for the staff involved in the design and running of the courses (especially those with technology-enhanced learning components).

O3 The definition of work processes for implementing the technology-enhanced learning components of the programme must be transparent for those involved in the implementation of the programme.

O4 The institution conducts a programme of continuous quality evaluation directed towards programme improvement.

O5 The institution is responsive to student complaints concerning the courses (especially those with technology-enhanced learning components).

Culture
C1 There are clear and demanding expectations towards the students and teaching staff, as a major pillar of the learning culture of the programme.

C2 The philosophy of change, innovation and co-operation within the institution (especially with regard to technology-enhanced learning) is stated.

C3 Issues of workload, compensation, ownership of intellectual property resulting from the programme and their impact on the commitment and participation of the staff have been considered.

C4 Commitment of the institution’s leading management to support the objectives and implementation of the programme, especially concerning the technology-enhanced learning components within it.
2 Guidance Notes on EFMD CEL Quality Criteria

2.1 Programme Profile

2.1.1 Overview of the Programme Profile

The basic conditions for programmes targeting EFMD CEL Accreditation are diverse. As with any organisation, the effective strategic performance of a programme can only come from the full awareness of its operating environment documented as explicit programme objectives. As the central pillar of a programme's objectives, the relevant target population of the programme must be adequately described. Furthermore, this is absolutely essential for understanding the relevant market powers and for setting up the programme's objectives on a sound understanding of the wants and needs of the targeted learners and the internal capabilities. The programmes and, in particularly, the programme objectives should be documented explicitly and appropriately and should be based on a rigorous and regular review process.

The key areas of reflection are:

- Analysis of the market context and strategic goal setting
- Programme objectives, management and documentation
- Identification and definition of the target group

The evaluation of the quality criteria within the programme profile focuses mainly on the programme management and the learner perspective. As a result, quality is particularly related to how it fits into the institutional context and fulfils the programme goals.

2.1.2 Reflection on EFMD CEL Programme Criteria

2.1.2.1 Analysis of the market context and strategic goal setting

Based on the results of many institutional-level projects on quality research, the relevant success factors for any educational institution are challenging goals as well as shared visions and values among the central stakeholder groups (see summaries in Wirth, 2005c). As a consequence, Back concludes that a corporation's strategy is the most important link to an appropriate educational technology strategy (Back, 2005, 25). The consistency of the programme goals in relation to the superior institutional goals has a substantial influence on the quality of a programme (see the conclusions in Stone, Schowalter et al., 2001) and supports both the effectiveness and the efficiency evaluation (Watkins & Kaufman, 2003, 510f.). Gates
et al. (2002, 5) find target-oriented evaluations to be the most dominant evaluation type clearly prevailing over resource-based views and concepts. The dependence of the educational technology and the programme design on context-specific goals clearly reveals the inadequacy of generalised concepts of ‘good’ educational technology-supported programmes. It is of particular importance that these programme goals are compatible, in line with the superior institutional goals and sustainably-supported (see Abicht & Dubiel, 2003, 11; PLS Ramboll Management, 2004, XXIII; see Watkins & Kaufman, 2003, 509). In addition, the programme goals should be challenging, but achievable, and they should be integrated into the daily work life (see Mayer, D. P., Mullens & Moore, 2000, 40) (→ quality criterion PR1).

Each organisation and hence each educational institution operates in several markets together with stakeholders and partners (see also Stone, Tudor et al., 2001, 7). Therefore, it is of particular importance to gain a clear understanding of the relevant market powers (see Höffer-Mehlmer, 1999, 696) which have been documented by many quality management approaches (like EFQM, ISO, DIN, French Code of Practice for e-Learning). A market analysis includes a systematic observation of the interests and needs of the potential customers and participants over a certain period of time (Decker, 2000, 140). Such measures should mainly allow for the designing of adequate and appropriate educational programmes that interest enough participants and set learning incentives and motivations to participate in this specific educational programme. The personal, time-related, financial and content-specific design of a programme should be well received by the stakeholders and efficient to ensure an adult-oriented teaching and learning situation with respective individual and professional success (see also Decker, 2000, 140). Educational technology-supported programmes should base their strategic goals on a thorough needs and market analysis which would allow the strategic added-value of educational technology within the programme to be determined (see also Watkins & Kaufman, 2003, 508). Höffer-Mehlmer (1999, 702f.) lists various instruments (e.g. questionnaires for alumni, pilot courses, trend analysis, requisition notes) that must be reflected on individually for each programme context to finally contribute to a well-founded business model (see also Falk, 2000, 578ff.) (→ quality criterion PR3).

### 2.1.2.2 Management and documentation of educational measurements

The outcome of the research on the quality of educational institutions and educational programmes strongly reveals the importance of well-educated and integrated preceptors/heads of training for a high quality learning context (see Wirth, 2005c). Two studies from the American context come to an analogous conclusion (see Council of Regional Accrediting Commissions, 2000; WCET, 2001). On top of this requirement, it is essential that not only highly skilled employees and leaders are available, but that the roles and working processes have been defined and set out to establish clear responsibilities, competencies and tasks...
(Johnson, 1993, 76f.; see case study results in OECD, 2003, 188; see also Wirth, 2005b, 159ff.). The educational rigor and scope have to be assured through the evidence obtained from the approval processes, and by having appropriately qualified people define the desired outcome, develop the curriculum, and determine the assessment criteria (in accordance with Council of Regional Accrediting Commissions, 2000; WCET, 2001) (→ criterion PR3). An evaluation of the programme objectives should also help forecast future costs and the sustainability of the programme being evaluated, validate the programme and course objectives, and provide information for the refining and positioning of the programme in competitive distance education markets (Rovai, 2003, 114). By doing so, an efficient and effective support of the quality assurance and improvement mechanisms may be implemented (see Newby, 1999, 272f.) (→ quality criterion PR3).

In the knowledge economy, the decision whether a course is appropriate to the learner’s needs gets closer and closer to the perception of the learner as a co-constructor of his learning success (Pawlowski, 2004, 94) and hence moves away from well-informed professional educational advisors and institutions. In order to make a well considered decision, the prospective students need reliable and decisive information on the programme objectives, the programme structure, the learning and teaching philosophy, the prerequisites, the estimated study time (broken down into categories such as face-to-face exposure, study time with printed material and technology-enhanced learning environments), the required technology and technical competence and the admission rules – only to name the most important ones (Frydenberg, 2002; see also Högsdal, 2004, 215; see Kerres, 2001, 142ff.; Noe, 2002, 100ff.) (→ quality criterion PR4). Various empirical research projects in the tertiary educational sector in Sweden and Austria confirm the importance of binding programme documentation (Lagrosen, Seyyed-Hashemi & Leitner, 2004, 65). The explicit outlining of programme goals combined with the respective performance reports and the drafting of the operative implementation are the basis for the documentation of educational measurements (see Schweiger, 1996, 26) (→ quality criterion PR4).

2.1.2.3 Appropriate identification and definition of the target groups

The learning needs vary according to the target group. Hence, different target groups will also surely differ in their needs and their perception of technology-enhanced learning supported programmes (McGorry, 2002, 169). Knowledge about the learner’s wants, needs and abilities (learner’s readiness for online learning, access to and familiarity with the technology required, proficiency in the language of instruction, individual learning style, educational goals, as well as aspects of the individual’s culture) from the targeted population becomes an important factor (see Hughes, 2004, 368) not only for programme design but also as a selection criterion for prospective students. Knowing the characteristics of the target group is vital (see Schüpbach et al., 2003, 166) for any technology-enhanced learning supported pro-
gramme (see criterion PR4). The following characteristics of the targeted learners should be addressed in some detail (partly in accordance with Schüpbach et al., 2003, 166):

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professional standing and/or educational background</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous knowledge and experience</th>
<th>What level of previous knowledge and experience can the defined target group be presumed to have?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What level of previous knowledge and experience can be defined as a minimum to successfully pass the programme?</td>
</tr>
<tr>
<td></td>
<td>With which instruments and tools should the learners be familiar, which technologies do they use in their daily business and hence can be integrated into the technology-enhanced learning scenarios?</td>
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<table>
<thead>
<tr>
<th>Student motivation and student context</th>
<th>What are the motivational forces to be considered in running the programme?</th>
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<tbody>
<tr>
<td></td>
<td>How much time can learners spend on the programme and programme content?</td>
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<tr>
<td></td>
<td>Which infrastructural requisites are implied by the specific target group? Can they be changed?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning abilities, abilities for self-directed learning</th>
<th>To what extent are the targeted learners used to self-directed learning?</th>
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<tbody>
<tr>
<td></td>
<td>Are the targeted learners used to technology-enhanced learning? Can positive prior experiences be assumed or is it likely</td>
</tr>
</tbody>
</table>

2 E.g. if students are rather extrinsic motivated (compulsory for career, salary increase by passing the programme, a. o. m.) the programme should be guided relatively firmly, whereas if the motivation is intrinsic, the control of learning progresses might be relinquished Kerres, 2001, 140.
that learners did make bad experiences with technology-enhanced learning before?

2.1.3

If the target groups aimed at are very heterogeneous in terms of the expected prior knowledge or if the student/participant recruitment itself is highly competitive, then clear standards, procedures and measures must be operational to make the selection criteria and programme expectations transparent to the students applying.
2.1.3. Implementation of EFMD CEL Programme Criteria

<table>
<thead>
<tr>
<th>#</th>
<th>Quality criteria</th>
<th>Method of data-collection</th>
<th>Performance indicators</th>
<th>Auditor quality evaluation standards</th>
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<tr>
<td></td>
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<td></td>
<td>Documented (strategic) objectives of the programme.</td>
<td>Explicitly stated, meaningful and comprehensible objectives.</td>
</tr>
<tr>
<td>PR1</td>
<td>The objectives of the programme are explicitly enumerated and consistent with and integrated into an overall strategy of institutional development and quality improvement.</td>
<td>Doc</td>
<td>Reflections on how programme’s objectives are set, who is responsible for their regular review and the regularity of the review process.</td>
<td>Explicit process that is defined and operational with objectives reviewed at least every two years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reflections on the consistency of the programme’s objectives with the institution’s development and quality goals.</td>
<td>Comprehensible and convincing consistency.</td>
</tr>
<tr>
<td>PR2</td>
<td>The target group of the programme is clearly defined.</td>
<td>Doc</td>
<td>An explicit target group description including:</td>
<td>Comprehensible and convincing description including at least those items listed as indicators.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Socio-demographic characteristics,</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>▪ Previous knowledge and experience (Subject matter expertise and use of technology-enhanced learning technologies),</td>
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<td></td>
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<td></td>
<td>▪ Student/participant motivation and learning abilities.</td>
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<tr>
<td>PR3</td>
<td>The staff which designs, manages, runs and evaluates the programme must be appropriately qualified for carrying out their responsibilities. This involves namely the programme managers, authors, e-tutors, e-moderators, and quality managers.</td>
<td>Doc</td>
<td>A document that identifies the individuals and their roles and specifies the responsibilities and duties of each.</td>
<td>There are clearly defined roles related to the leadership, administrative and teaching responsibilities for the programme with individuals identified for each. The description should include roles like programme manager, technology-enhanced learning responsible, technical support, authors, e-tutors, e-moderators, quality managers.</td>
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<tr>
<td></td>
<td></td>
<td>SA</td>
<td>A reflection on the relevant expertise of the authors, e-tutors and e-moderators in terms of their individual further education relevant to the programme, especially within the last two years, their amount of teaching activities (within the programme or in other similar programmes) and their work experience in the field of study and/or publications in the field of study.</td>
<td>A convincing qualification profile which takes into account the respective role’s specified responsibilities and duties and contributes to a high value programme.</td>
</tr>
<tr>
<td>PR4</td>
<td>The students/participants are provided with the relevant programme information available prior to the start of the programme.</td>
<td>Doc</td>
<td>Brochures, documents and other information for students/participants needed to support their decision on whether or not to participate in the programme.</td>
<td>Documents provide substantial details on the programme’s pedagogical profile and should show, for example, the objectives, structure, learning and teaching philosophy, prerequisites, estimated study time – broken down into categories like: face-to-face exposure, study time with printed material and technology-enhanced learning environments, required technology and technical competence, admission requirements including the cost for participants.</td>
</tr>
<tr>
<td>AT (SI)</td>
<td>Student/participant satisfaction with the provided programme information.</td>
<td>Students/participants interviewed are satisfied with the relevancy, accurateness and comprehensiveness of information provided.</td>
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2.2  Pedagogy

2.2.1  Overview of the Pedagogical Dimension

Literature on quality in education reveals the strong dependence between good pedagogic concepts and strategies on the wants, needs, and preconditions of the targeted learners or participants and the underlying learning goals of an educational programme. Hence, it is not possible to make general statements on the validity of the pedagogic concepts and the adequacy of criteria from other dimensions without a prior reflection on the target group’s needs and the programme’s learning objectives. As such, the pedagogic dimension should be considered as the central dimension (see Seufert & Euler, 2004, 19) with much impact on the quality criteria outside the pedagogic dimension whose own quality criteria is again based on prior pedagogic reflections. Hence, the learning objectives, teaching methods, interaction and content creation must be reflected in respect to the programme quality.

The key areas to be reflected are:

- Pedagogic strategy and learning objectives
- Added-value and integration of technology-enhanced learning within the programme (and other used teaching and learning methods)
- Interaction among learners/participants, between learners/participants and faculty, and learner/participant content interaction
- Content creation and deployment
- Evaluating and assessing learner’s/participant’s learning success

2.2.2  Reflection on EFMD CEL Pedagogic Criteria

2.2.2.1  Pedagogic strategy and learning objectives

The programme must have educational learning objectives and outcome that are consistent with the programme objectives, the final assessment and the credential awarded (see criterion PE1). It is crucial that the pedagogical concepts and strategies explicitly address the paradigmatic assumptions on how the students/participants are expected to learn and how this relates to the learning objectives (see Dalsgaard, 2005). Taxonomies developed by Bloom, Krathwohl, Gagne, and others classify learning objectives by type and hierarchical order. The most widely applied is that of Bloom’s Taxonomy (see Bloom, 1956). According to Bloom, his taxonomy is intended to provide for the classification of educational goals and to be of general help to all teachers, administrators, professional specialists, and research
workers who deal with curricular and evaluation problems with greater precision (Bloom, 1956). In this sense, it becomes clear that professionally sound learning objectives are the basis for the building of pedagogic strategies and concepts. Moreover, only sound learning objectives permit comprehensibly operationalised expectations of the learning results to be obtained that can be validly assessed. Among the many different quality approaches and directions in the quality discussion (see the more detailed discussion in Wirth, 2005c, Chapters 3 and 4), there is a vast consensus on the importance of properly formulated and communicated learning objectives (→ quality criterion PE1).

The evaluation of the learning objectives must be drawn from two major points of view. On the module level, it has to be evaluated whether or not the sub-goals are in-line with the stated overall learning objectives of the programme. At the same time, it has to be assessed on the programme level if the overarching learning objectives have been properly operationalised into consistent sub goals (Thiessen & Ambrock, 2004, 265). To rate the quality of the learning objectives, it is very crucial to start with a comprehensible and comprehensive analysis of the targeted learners’ prior knowledge, their ability to learn and to achieve, as well as their expectations and needs (see Schüpbach et al., 2003, 167). Beside supporting the operationalisation of the learning content and the teaching and learning methods to be used, learning objectives support the formative and summative evaluation of learning efficiency and success (see Tyler in Baker, 2003). In this context, Ausubel and Kirkpatrick talk about so-called advanced organizers’ (Ausubel, 1960, 267ff.; Kirkpatrick, 1994, 51). This reasoning therefore supports the notion that general and abstract definitions of quality criteria for pedagogic concepts and learning objectives are not effective. It is much more important to consistently operationalise the programme objectives into learning objectives and to correctly evaluate the respective (formative or summative) success of the learners/participants (→ quality criteria PE9 and PE10).

2.2.2.2 Added-value and integration of technology-enhanced learning within the programme (and other used teaching and learning methods)

To gain acceptance and fully emerge, learning scenarios based on educational technology must be at least as efficient and effective as traditional classroom courses. As discussed in greater detail in the technological section of this paper (see section 2.4, technology acceptance model by Davis), besides the ease of use, it is mainly and more importantly the perceived usefulness of a system that has an impact on a person’s appraisal and hence acceptance of innovation (Davis, 1989, 320f.) as has been proven by various research work carried out (also Bürg & Mandl, 2004, 11; Davis, 1989, 333). Thus, it is crucial to realize (and not only argue) and communicate the educational technology-specific added-values (Behrendt, Ulmer & Müller-Tamke, 2004, 27; see also Högsdal, 2004, 127; Kerres, 2001, 144; see Seufert & Euler, 2004, 19). Hereby, Russell’s work on the ‘no significant difference
phenomenon’ (see for example Russell, 1999) clearly sets out that a sound reasoning of the added-value of educational technology cannot rely on an empirical inter-media comparison. Taking Russell’s work one step further, it becomes clear that the added-value of educational technology is not just about classic existing educational goals as well as already-known target groups, but even more about opening up to new populations, new learning environments and new educational goals (also see Kerres, 2001, 144). At the same time, this also implies that educational technology alone only carries along potential but not already realised added-values. Thus a context-specific target group as well as learning goal-oriented reflections are found to be very basic, but very important preconditions to the successful use of educational technology. The fact that many learning objectives can be reached by using educational technology-supported teaching and learning methods as effectively and efficiently as by using traditional classroom trainings must not mislead us into thinking that they are all about the same. Of course, they are not; the teaching and learning methods that have to be employed are very different (American Federation of Teachers, 2000, 26). Analogue to the evaluation of the quality of learning objectives, target groups play a very crucial role for the evaluation of the employed educational technology-supported methods. Just as the learners’ needs differ in respect to the learning content, they differ in their expectations, abilities and skills, and attitudes with regard to the use of educational technology (McGorry, 2002, 169; similarly Watkins & Kaufman, 2003, 507). Hence, a meaningful and comprehensive target group analysis and determination form an integral premise for the evaluation of the expected added-values of educational technologies (Kerres, 2001, 144). As a consequence, Watkins suggests thinking about the various alternatives when it comes to the selection of the appropriate teaching and learning methods (Watkins & Kaufman, 2003, 513). This is to make sure that the most effective and efficient alternative is selected after balancing the benefits and the disadvantages. Even thought purely objective criteria cannot allow for the selection of the best alternative, some central points to be considered have been revealed by the many studies on user acceptance in educational technology (Allen & Seaman, 2003, 2004; ASTD & Masie Center, 2001; Bertelsmann Stiftung & Deutscher Volkshochschul Verband e.V., 2002; Brennan, McFadden & Law, 2001; Cognos-Innotec, 2002; Harper et al., 2000; Kleimann, Weber & Willige, 2005; Massy, 2002; Michel et al., 2002; Mummert+Partner, 2002; Nordmedia & Institut für Medien und Kompetenzforschung, 2004; Webacad, 2002). For instance, studies by Harper et al. (2000) and Brennan et al. (2001) illustrate the attractiveness of time flexibility for adult learners, especially for those who have other obligations beside their education (employment, children, hobbies) (Brennan, 2003, 20; similarly Scott, 2002, 3). Different empirical investigations support the importance of flexibility in location, time and place and denote this to be the most important factor influencing the learner’s satisfaction.

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3 For instance, the ability for self-conducted learning, working in distributed teams, etc.
with the learning scenario (see also Burbules & Callister, 2000, 277ff.; Cashion & Palmieri, 2002b, 50ff.; Collis & van der Wende, 2002, 44). A high quality educational technology-supported programme distinguishes itself from others in that it dedicatedly and self-critically reflects the specific contribution of technology-enhanced learning: “Success in the future is likely to be dependent on the ability of an institution to create the future they want, as opposed to reacting to what others have produced” (Watkins & Kaufman, 2003, 508). Finally, the added-value of educational technology in a specific programme must be seen in relation to the targeted goals, and the (opportunity) costs as well as in respect to the available resources (Watkins & Kaufman, 2003, 509). The explicit reflection of the added-value of educational technology builds the basis for the target group and context-oriented design of the learning scenarios and hence the framework for a well-reasoned and convincing use of new media (→ quality criterion PE2)

Since learners may feature very heterogeneous education experiences, styles and prior knowledge when it comes to technology-enhanced learning, it may become necessary to implement specific modules that teach the use of the essential educational technology tools prior to the core learning contents. In the same way, it may be necessary to provide different types of learners with different types of teaching or learning methods (see Graham et al., 2000, 10f.) which in any case has costly consequences (Bates, T., 2000, 205). Research in this context is very contradictory and may not give clear indications on the learning styles and types to be respected (see the excellent work done by Coffield et al., 2004). Educational research tends even more not to evaluate the quality of the educational measurements against the different learning styles (in contrary, for example, to the work of Ehlers, 2003), but to take these concepts as guiding principles for the planning and design phase. Hence, the best precondition for the quality of a programme is by far a tailored target group and a varied set of media as well as teaching and learning methods (Clement & Martens, 2000, 110; also see Dillon, C. & Greene, 2003, 237; Ditton, 2000, 83; Meyer, 2002, 93; see Scott, 2002, 4) (→ quality criterion PE3). At the same time, research on the effectiveness of courses have shown that media is most effective when it explicitly addresses the learning goals (see the overview in Wirth, 2005c, 105f.). Consequently, it has to be assured that the learning objectives addressed by educational technology-supported methods are integrated into the curriculum as well as are part of the summative or formative evaluations of the learning success (→ quality criterion PE5).

2.2.2.3 Interaction among learners/participants, between learners/participants and faculty, and learner/participant-content interaction

‘Interaction’ is an important and essential construct that has been confirmed by a wide variety of research done (see Astleitner, 2000, 29; Kelsey & D'souza, 2004; Kotzé & du Plessis,
2003, 199; McGorry, 2004, 14ff.; Rogers, 2001, 19; Rovai & Barnum, 2003, 53; Schulmeister, 2005, 489; Swan et al., 2000). But as correctly criticised by Moore, the term ‘interaction’ carries so many meanings “as to be almost useless unless its specific sub-meanings can be defined and generally agreed upon” (Moore, M. G., 1989). Hence, Moore defines three types of interaction: learner-learner, learner-instructor and learner-content\(^4\) (see Moore, M. G., 1989). In this framework, learner-instructor interaction should be considered as a crucial component that facilitates the other two and creates an effective learning environment (Dillon, C. & Greene, 2003, 241) (→ quality criterion PE4). This conclusion is very much in line with the central insights from user acceptance studies\(^5\).

Yet there still exist some authors who unrealistically see the huge economic potential of educational technology which omits the expensive human interaction (see for example Davenport, 2001; see also Münzer, 2004, 52). Much more convincingly, Muirhead, who is dedicated to a more constructivist teaching and learning conception, puts great emphasis on the promotion of interaction among learners through detailed learning objectives and curriculum structures (Muirhead, 2001). Interaction between learners and teachers should be designed not only to promote the understanding of the learning contents but foremost to promote the learner’s understanding of his role within the learning process (Dillon, C. & Greene, 2003, 242) (→ quality criterion PE8). Through such a statement, many authors emphasise the importance of timely and learner-specific feedback (Downes & McMillan, 2000, 171; see also the overview in Rovai & Barnum, 2003, 59; Smith, A., 2004a, 28, 37). The research done by Vrasidas & Zembylas (2003, 282ff.) reveals a potential positive effect on the learning success of both synchronous and asynchronous communication. It’s essential for the realisation of this potential that the constructive use of interaction is always reflected against the background of properly formulated learning objectives and disposable resources (→ quality criteria PE4 and PE8).

Furthermore, interaction must be considered as a central motivational factor for the students, because they often experience a trade-off between the loss of direct, personal contact and the increased access and flexibility (see Arbaugh, 2001, 42ff.; also following Bates, T., 2000, 205).\(^6\) As a consequence, in their overview of the existing quality concepts, Srikanthan & Dalrymple identify dynamic collaboration as the one central focal point among all the ap-

\(^4\) Following Gilbert & Moor, Roblyer & Ekhaml define learner-content interaction as interactivity Roblyer & Ekhaml, 2000.

\(^5\) The Mummert+Partner study that was conducted in Germany concludes for example: „Der mit Abstand größte Hemmschuh ist die mangelnde Betreuung der Lernenden.” (Mummert+Partner, 2002).

\(^6\) In this context, Snook talks about a missing security net. That’s why he attributes a very high importance of interaction to e-learning Snook, 2003.
proaches in their review (similar Fahy, 2003; Srikanthan & Dalrymple, 2002, 219). Holmberg emphasizes that “learning is encouraged by frequent communication with fellow humans interested in the study” (Holmberg, 1989, 163). Moreover, studies at the University of Central Florida (Hartmann, Dziuban & Moskal, 2000), New Jersey Institute of Technology (Hiltz et al., 2000), and Fraunhofer's Integrated Publication and Information Systems Institute (IPSI) (Fraunhofer IPSI, 2003, 17) as well as research and publications by other authors consider the quality of online communication and specifically the quality of collaborative interaction to be crucial to efficiently reach the relevant learning objectives (see Roblyer & Ekhaml, 2000). It has to be considered that the quality of the collaborative interaction is among one of the most important factors to promote learning efficiency and learner/teacher satisfaction (similarly Bates, A. W. & Poole, 2003, 197f.; Cashion & Palmieri, 2002a, 13; Graham et al., 2000; Hannafin et al., 2003, 251; Institut für Medien und Kompetenzforschung, 2002, 4; see Kerres, 2002; Koller et al., 2001, 4.9/4; Meyer, 2002, 53; see also Zhao, 2003, 217). Accordingly, Schulmeister concludes: “Ein relevanter Faktor für den Erfolg der Zusammenarbeit ist das Ausmaß, in dem die virtuelle Lernumgebung und ihre Werkzeuge eine echte Interaktivität ermöglichen.” (Schulmeister, 2002, 10) (quality criterion PE4). In quality literature, there are a wide range of positions in respect to the value of interactive learning contents versus human interaction (see Meyer, 2002, 16; Phipps & Merisotis, 1999, 31). This controversy clearly reveals that it is very simplistic thinking to believe that computer technology per se is more interactive than television, for example, just because a television is considered to be a passive medium whereas a computer supports some kind of interaction. Bates and Matikainen emphasize (contrary to the statements in Rovai & Barnum, 2003, 53) that it’s not the quantity of interactivity but the quality of the interaction that is decisive for the success of a learning process (Bates, A. W. & Poole, 2003, 100; Matikainen, 2002, 248). Critically, Münzer finds a lack of practicable methods which could be used to help evaluate and optimise cooperative technology and tools in order to assure its quality (Münzer, 2004). Still, Roblyer & Ekhaml’s rubric, which is based on the promotion of social interaction, the design of teaching and learning structures, interaction with learning content, the importance of interaction for the learning process, shows at least some potential ways for the appropriate evaluation of interactivity (Roblyer & Ekhaml, 2000). From the successful use of such a rubric, it becomes clear that teachers, respectively e-tutors, have to be well educated or be selected by their personal ICT or moderator and tutor skills and competencies (see Collis & van der Wende, 2002). As a consequence, quality interaction also implies a financial dimension. In contrast to Davenport, who sees an economical success factor for technology-enhanced learning in the learners’ lack of supervision by tutors (see Davenport, 2001), the importance of interaction asks much more for a sustainable and scalable financial planning and budgeting (quality criterion PE4). Furthermore, there are also some relevant limitations with learner-content interaction. As learning objectives and content become more complex, it will become increasingly difficult to provide quality of interaction through software
or content and easier through tutor intervention or interaction among the students (Bates, A. W. & Poole, 2003, 101f.). These considerations must be reflected in the design of the programme and courses (→ quality criterion PE2).

2.2.2.4 Content creation and delivery

Whether the learning contents should be self-developed or external off-the-shelf, the contents should be one of first and foremost questions that must be asked within the content-creation process. Often, internal development is preferred even though an external purchase and customization could evidentially result in better value for money. The reason can mainly be tracked back to budgeting and accounting issues (see Bates, A. W. & Poole, 2003, 181) or a lack of acceptance by the teaching personnel and faculty (NIH: Not invented here, problems of support with the content Kerres, 2001, 319). In many publications, this ‘make or buy’ decision is presented in a very polarising way while Günther & Mentzel comprehensibly illustrate various possibilities which exist between these two positions (Günther & Mentzel, 2003, 299). However, it is essential to compare the specific decision, whether it be for internal, external or a mixture of both, against the background of the existing programme and learning objectives, the accruing costs and the current mid- to long-term budgets (similarly Kerres, 2001, 322) to make sure that the decision is not guided by short-term budgeting restrictions. It is commonly agreed that the designing, developing and implementing of digital learning content is relatively complex and draws upon a broad set of skills and knowledge (Kerres, 2001, 319). Thus, literature provides many potential process models and guidelines for content development that may serve as generic frameworks (Doberkat et al., 2000, 83ff.; Kerres, 2001, 325ff.; Mayer, R. E., 2001; Pawlowski, 2001; Reglin et al., 2004). It’s hardly possible to address all the differences between these approaches. However, in relevant literature, a planned and well-structured procedure is found to be the central success factor to master the greater complexity and intensified division of labour (see Frydenberg, 2002) (→ quality criterion PE6). It is crucial that people involved in this processes are well-qualified, possess the required skills and knowledge to fulfil their responsibilities (Lagrosen et al., 2004, 65) (→ quality criterion PR3), work towards well-defined design and development plans and communicate clear guidelines for the production of electronic media (scripts, media, print material, financial budget, critical path) (i. e. Bates, A. W. & Poole, 2003, 184ff.). As this is largely a team effort, a very important part of this process is that the organisations learn how to effectively and efficiently produce, adapt, and store electronic learning content. Therefore, organisations should be able to systematically capture, process and reuse their experience of learning content development for maintaining and improving future efficiency (see Fahy, 2004, 162; similar McGorry, 2003, 161) (→ quality criterion PE6). Within this context, explicit working conducts on intellectual property (see Hilton & Neal, 2001, 66ff.; Simonson & Bauck, 2003, 421) must also be increasingly considered as essential duties during the design and
development of learning contents (see Bates, A. W. & Poole, 2003, 194ff.; see Dirr, 2003, 467; similar Frydenberg, 2002; see reflections in Sherry, 2003, 451ff.). The easier it gets to exchange electronic learning contents (in this context, see reflections on technological metadata standards in section 2.4.2.3), the bigger the danger of intellectual property violations (in accordance with Lipinski, 2003, 486; also see Simonson & Bauck, 2003, 421). To make things even worse, a study that was conducted for the EU Commission clearly sets out that especially in the academic sector, there are many unanswered intellectual property questions remaining that hinder the increasing development and use of technology-supported learning contents and scenarios (similar Coppola, Hiltz & Rotter, 2001, 2; also Levy, 2003; PLS Ramboll Management, 2004, 84). Beside the protection of external authors’ interests (i.e. by project specific settlements, see University of Illinois Faculty Seminar, 1999, 3) it is key to protect internal developments. Copyright protection is especially important with audio-visual materials and require specific local and national legal knowledge (see Levy, 2003; see Wallace, 2004, 94f.). Illustrating this point, Lipinski (2003, 481ff.) reflects upon the many different legal backgrounds for the US and thereby reveals a very heterogeneous situation on the national level - not to speak about the even more heterogeneous international and global state. Hence, intellectual property rights are much too complex to handle for every single author alone. Furthermore, educational institutions must draft, communicate, implement and super-intend explicit and comprehensible guidelines for the use of intellectual property based on the existing legal sources (➔ quality criterion PE6).

Literature also reveals that the requirements for the final and evaluative assessment of the learning contents is crucial for its quality (Bates, A. W. & Poole, 2003, 203). To improve objectivity, this evaluation is ideally carried out by a person who was not involved in the planning nor evaluation process (Kerres, 2001, 329). Beside eliminating the errors, one of the major concerns should be to monitor the non-discrimination of the contents; it should be assessed whether or not the learning contents are free from racism, sexism, ageism or - more generally speaking - free from discrimination against all minority groups (Gewirtz, 2000, 365; see MacPherson, 1999) (➔ quality criterion PE6).

One of the big advantages of multimedia learning contents, which is omnipresent in literature, is easy and fast updating (Euler, Dieter, Seufert & Wilbers, 2004, 8; Jechle, 2003, 288; Laur-Ernst, 2004, 23). From another point of view, Zimmermann & Scheer emphasise that it is the up-to-datedness of the learning content that is finally the decisive factor for the users’ acceptance (similar Geukes, 2000, 47; see Zimmermann & Scheer, 2003, 316). At the same time, Stadelhofer critically observes that often the meaning of up-to-datedness is overestimated; topicality is mainly demanded where learners are expected to learn detailed and vocational skills and knowledge. However, up-to-datedness is not as an important factor with contents that serve only for orientation since these contents do not get obsolete at the same
pace as more detailed and practical knowledge (Stadelhofer, 1998). In the same line of thinking, other authors emphasise the importance of continuous revisions and checks primarily in respect to the underlying learning objectives (Pawlowski, 2001, 212). In conclusion, the competencies of the learning content authors, the conformance to the learning objectives as well as the regular revision and check of the topicality of the learning contents considered under the constraint of a sound cost-benefit ratio are the primary requirements for high quality technology-supported education programmes (→ quality criterion PE7).

2.2.2.5 Evaluating and assessing learner’s/participant’s learning success

Assessments are important factors that influence the nature and effectiveness of a learning environment (see Bates, A. W. & Poole, 2003, 201f.). By saying this, it becomes obvious that evaluation and assessment are not just about the broadly criticised extrinsic motivation of learners by grades and exams (see also Pedersen & Williams, 2004, 285). As Hannafin et al. correctly observe the form and content of the evaluation of learning success do set priorities (similarly Súilleabháin & Coughlan, 2003, 50): “Assessment practices define importance from the teacher to the student in explicit ways” (Hannafin et al., 2003, 256) (→ quality criterion PE9).

Whereas teaching methods in most programmes have dramatically changed by introducing distance- and distributed-learning scenarios, assessment practices have largely been mapped over from traditional teaching-learning approaches and often emphasize those aspects of learning that can easily be assessed (Hannafin, Reeves & Hayden, 2001). Generally, there is a broad consensus that the content and form of evaluations must adapt fundamentally to the new requirements of educational technology-supported programmes (see Whittington, 2000, 52): “Traditional summative evaluation cannot appreciate these changes [remark: from the implementation of ICT or technology-enhanced learning] and focuses students' work on marks and not on personal development and knowledge construction.” (Europäische Kommission, 2003, 26). In their empirical work, Pedersen & Williams could however not identify a single superior mode of assessment (Pedersen & Williams, 2004, 301) which also must be brought forward to technology-supported higher and further education programmes. Different theoretical approaches on valid testing highlight some important factors to be considered (APA, AERA & NCME, 1999; Linn & Gronlund, 1995; Metzger, 1997; Metzger, Dörig & Waibel, 1998; Metzger & Nüesch, 2004). Metzger (2004) describes them as follows:

**Validity**  Assessments should assess what they pretend to assess. Two aspects of validity should be highlighted: firstly, assessed knowledge and competencies must be representative for the learner’s learning process and congruent with the learning objectives of the programme. This implies an adequate variety of
questions among the relevant topics and among the different levels of complexity. Secondly, assessments should measure the learner’s level of achievement solely in respect to the constructs he should have learnt and should exclude interfering variables (like guessing).}

**Reliability**
Assessments should accurately measure the learning success of the learner. This means to avoid measurement errors that falsify assessment results and finally the appraisal of results. Objectivity (inter and intra personal) in conducting, evaluating and interpreting should establish equal assessment settings.

**Economy**
The value of an assessment should be reflected in respect to the costs and efforts in designing, conducting and evaluating it.

**Equality**
In respect to the programme strategy and targeted learning groups, an assessment should be based on those determining factors that allow equality of chance among all learners. In particular, electronic exams should be evaluated under higher scrutiny (see Parnell & Carraher, 2003, 432).

There are reciprocal dependencies between these four quality indicators that can apparently be characterised as trade-offs. Thus, measurements that improve the validity of an assessment tend to demand higher effort for design, delivery and evaluation. Assessments following professional standards explicitly reflect the above dimensions and try to realize an optimised mix of the above-mentioned indicators. However, the validity of the assessments has to be considered as the most important factor (APA et al., 1999; Metzger et al., 1998). To face the new challenges posed by electronic tests, it is suggested to treat these like ‘open book’ exams and focus on the application rather than the reproduction of knowledge (see Hollands, 2000). Given this background, it becomes clearer that the form and design of a specific evaluation of learning success can only be assessed against the specific determining factors of a particular programme (similar Bates, A. W. & Poole, 2003, 201; Kirkpatrick, 1994, 51). For quality evaluation, it is assumed that the indicators above are reflected in an explicit way and that a comprehensible and reasonable compromise was found. Hence, it is not the question of the absolutely best form of evaluation but the quest for an evaluation process which is consistent with the underlying learning objectives and corresponds to the used technology-supported teaching and learning methods (see Seufert & Euler, 2004, 23) (→ quality criterion PE10).

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7 “[…!] test questions should be realistic, up-to-date and unambiguous.” Zakrzewski & Steven, 2003, 616
### 2.2.3 Implementation of EFMD CEL Pedagogic Criteria

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<th>Quality criteria</th>
<th>Method of data-collection</th>
<th>Performance indicators</th>
<th>Auditor quality evaluation standards</th>
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<tbody>
<tr>
<td>PE1</td>
<td>The programme’s learning objectives are clearly defined and conform to the respective professional pedagogical standards.</td>
<td>Doc</td>
<td>Document(s) containing the programme’s learning objectives following an appropriate structure and granularity.</td>
<td>§ Learning objectives must address the learning content and the kind of cognitive, communicative, etc. behaviour to be learned.</td>
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<td></td>
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<td>§ Learning objectives should support teaching and learning and should ideally be formulated for 1/2 days. Exceptions are possible, but should be explained.</td>
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<td></td>
<td></td>
<td>AT (AV)</td>
<td>Strategic fit of the learning objectives to the programme objectives.</td>
<td>Comprehensible and convincing argumentation of how the learning objectives fit to the programme’s objectives.</td>
</tr>
<tr>
<td>PE2</td>
<td>The pedagogical and strategic (added) value of technology-enhanced learning within the programme is explained.</td>
<td>SA</td>
<td>A reflection and assessment of the contribution technology-enhanced learning provides for achieving the learning objectives set out and addressing, for example:</td>
<td>Meaningful, comprehensible and convincing arguments related to the exploitation of the potential reflections on technology-enhanced learning within the programme.</td>
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<td></td>
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<td></td>
<td>§ Intensifying collaboration among students/participants.</td>
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<td>§ Enhancement of interactivity among learners during the learning process.</td>
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<td>§ Visualising abstract learning content.</td>
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<td>§ Organising new learning environments.</td>
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|   |                  | AT (AV)                   | Reflections on the consistency of the added value of technology-enhanced learning with the underlying programme objectives and in respect to the defined target group(s) and the selected technology. | • Convincing arguments on the added-value of technology-enhanced learning in achieving the programme objectives.  
 • Degree of implementation of the technology-enhanced learning components within the defined target group. |
### PEDAGOGY (CONTINUED)

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<tr>
<td>PE3</td>
<td>The structure of the programme allows for a diversity of learning and teaching methods.</td>
<td>SA</td>
<td>A reflection of how a variety of different teaching and learning methods are applied in order to exploit the richness of the pedagogical approaches to achieve the programme's general and learning objectives.</td>
<td>▪ Examples and arguments pointing out why the methods applied are appropriate for achieving the learning objectives.</td>
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<td>▪ The use of different methods should support different learning and teaching styles.</td>
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<td>PE4</td>
<td>Student/participant interaction with the teaching staff, other students/participants and/or interactive learning software is an essential characteristic of the programme and is facilitated through a variety of ways.</td>
<td>AT (AV)</td>
<td>Reflections on interactivity with the teaching staff and other students/participants and how it is facilitated within the programme including, for example: learning goals that are appropriate for applying interactive learning and teaching methods, methods used to foster interactivity, relevance of the content taught interactively with respect to the learning success (final assessment, if applicable).</td>
<td>▪ Elaborated and comprehensible reflections.</td>
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<td>▪ Providing relevant examples from the programme.</td>
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<td>AT (SI)</td>
<td>Student's/participant's perception of the interactivity within the programme.</td>
<td>The interaction within the learning design is appropriate to the learner's needs.</td>
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<tr>
<td>PE5</td>
<td>Content making use of technology-enhanced learning is integrated into the programme's curriculum and assessment system.</td>
<td>AT (AV)</td>
<td>Reflections on the integration of technology-enhanced learning components into the overall curriculum and its relevancy in respect to the assessments and learning experience.</td>
<td>▪ Complete, explicit and comprehensive statements.</td>
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<td>▪ Explanations should demonstrate a high level of technology-enhanced learning integration.</td>
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<td>▪ Providing relevant examples from the programme.</td>
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| PE6| There are principles/guidelines regarding the minimum standards for course development and design as well as for the use of third-party contents. | SA                        | A reflection on the principles and guidelines regarding the minimum internal standards for course development, including an evaluation of how well these standards are implemented in the current programme. The major focus should be on:  
  - Procedures and roles for course development, design and selection.  
  - Prevention of sexism, racism or ageism.  
  - Rigid rules on intellectual property rights.  
  - Appropriateness of the learning content for the target group. | The self-reflection should provide evidence on professional standards and guidelines that guarantee the learning content is free of sexism, racism and ageism and respects intellectual property rights. |
| PE7| Instructional materials (e.g. educational software) are reviewed periodically to ensure they meet the programme's objectives and standards. | AT (AV)                   |  
  - Comprehensive description of the content review and update process.  
  - Regularity of content reviews and updates. |  
  - Comprehensible documentation of the review process.  
  - Review intervals of less than 2 years. |
<p>| PE8| Feedback on both the student/participant assignments and                           | AT (SI)                   | Learners' satisfaction with the feedback provided.                                     | High satisfaction with the feedback provided. Critical opinions should be explained.                     |</p>
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<td>AT (AV)</td>
<td>Teacher’s/tutor’s reflections on the way in which feedback is provided and managed within the learning process.</td>
<td>Teachers and tutors must have a clear understanding of their respective roles in the learning process and should focus on timely (in respect to the learning scenario and urgency) and constructive (scaffolding, coaching) feedback.</td>
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**PEDAGOGY (CONTINUED)**

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<td>PE9</td>
<td>The relationship between the learning objectives, assignments and assessments follows a coherent framework.</td>
<td>Doc</td>
<td>A list of 5-10 technology-enhanced learning modules are provided for review (2-3 of which are selected by the audit team).</td>
<td>A transparent and comprehensible list of learning modules that allows a grounded selection.</td>
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<td>AT (AV)</td>
<td>2-3 different modules are selected by the audit team and will be evaluated more extensively during the audit visit.</td>
<td>The structure of the contents, the delivery of the assignments and the assessments of all three modules are coherent with the learning objectives.</td>
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<td>AT (SI)</td>
<td>Students/participants rate presentation of content, delivery of assignments and completion of assessments as useful and coherent.</td>
<td>High degree of student/participant satisfaction with the consistency of learning goals, content, assignments and assessment.</td>
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<tr>
<td>PE10</td>
<td>Assessments follow the respective professional standards and are valid to the learning objectives.</td>
<td>Doc</td>
<td>A list of at least 2-4 formative or summative assessments that could be reviewed (2–3 modules are selected by the audit team).</td>
<td>A transparent and comprehensible list of learning modules that allows a grounded selection.</td>
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<td>AT (AV)</td>
<td>Reflection based on the 2-3 different assessments and learning objectives that are covered by them.</td>
<td>Reflections should be sufficiently described and comprehensively explained. The construction of assessments follows professional standards if aspects of assessment validity, reliability, economy and equality are reflected and appropriate measurements are conducted.</td>
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2.3 Economics

2.3.1 Overview of the Economical Dimension

The goal of the economical dimension is to make media-mediated programmes affordable for the learner on the one hand (Moore, J. C., 2002, 55) but sustainable funded and financially able to advance the programme on the other hand. This purpose can be understood as cost effectiveness. “From the provider’s perspective, cost effectiveness is inextricably linked to its commitment to quality and the image or brand it wants to present to the public, its alumni and supporters, and its current and prospective constituents” (Moore, J. C., 2002, 20). From a quality point of view, the question of funding and resource allocation must be answered in respect to sustainable success. Often, this economical dimension is recognised but weakly integrated into a programme’s conceptual work (also see Fielden, 2001, 59; Seufert & Euler, 2004, 25), which is extremely important when it comes to an economically sound cost structure. Hence, there is a danger of creating qualitatively appealing, but financially unsustainable media-mediated programmes, which will be addressed by the following quality criteria.

The key areas are:

- Sustainable financial planning
- Funding and cost structure

2.3.2 Reflection on EFMD CEL Economical Criteria

2.3.2.1 Sustainable financial planning

Sustainable financial planning is mainly based on a sound understanding of the underlying relationship between the costs and benefits of a programme (see Berge & Kearsley, 2003; Fielden, 2001, 59; Kröpelin, 2003, 3.5/9; Levin, Levin & Waddoups, 2001, 5). Two major studies that focused on this relationship in the context of new learning technologies have been developed in parallel in the United States (Young, 1998) and in Canada (Bartolic-Zlomislic & Bates, 1999). One of the major findings of the Canadian study is that the cost structure of online learning is substantially different from those of face-to-face teaching (Bartolic-Zlomislic & Bates, 1999, 40). Initial investment costs for online learning are higher than those for (mostly already existing) face-to-face teaching – and economies of scale are often overestimated for online learning (Whalen & Wright cited in Dirr, 2003, 474; see Kröpelin, 2003, 3.5/24), because the increased interaction between teachers and learners requires other compensation models that may again be cost intense (see Bates, T., 2000, 207). This
lets us conclude that the demonstration of a sound funding structure appropriate to achieve the programme objectives is a key criterion for economically sustainable programmes. As a consequence, the financial plans for programmes offered through media-mediated distance learning must take account of the realistic contingencies; they must be formally approved and underwritten by the responsible programme management at a level which ensures that any variation between the planned and the actual financial performance of the activity does not compromise the academic standards. It should also ensure that the students’ interests will be protected even when the assumptions, such as those on the numbers of students registered, do not accord with the projections (criterion is formulated in accordance with Quality Assurance Agency (QAA), 1999). It should be comprehensible that proving a sound and stable financial basis in respect to the targeted programme goals must be considered to be a crucial indicator of programme quality (quality criterion E1). In particular, the programmes that are offered on an business-related basis (for profit) should be built upon a transparent and comprehensible business case that includes at least the existing needs of the learners, the prospective enrolments, the (fixed and variable) costs of the programme with special focus on the technology costs, the available resources and capabilities as well as the market conditions (barriers, competitors, a. o. m.) (Distance Learning Policy Laboratory, 2002, 7; Rovai, 2003, 114) (quality criterion E1).

2.3.2.2 Funding and cost structure

To tie in with the above-stated differences in the cost structures of the presence-oriented and technology-enhanced learning supported programmes (more detailed Bartolic-Zlomislic & Bates, 1999, 40), the planning of the recurring costs and the investments with regard to further improvements are of utmost importance (see Coimbra Group of Universities, 2002, 20; Frydenberg, 2002). A very often seen mistake is the budgeting of investments in a physical infrastructure as a one time investment. Fast-paced innovations and maturing hard- and software technologies as well as a growing demand from the teachers’ and learners’ side make this a dangerous, yet perhaps even naive assumption. Moreover, it is a programme management’s duty to bring these two different aspects into a stable balance that is finally guided by the programme’s or institution’s strategy: “The right balance has to be struck between capital and recurring costs, and between physical infrastructure and human support” (Bates, T., 2000, 78/79) (quality criterion E2).

To implement this claim, clear specifications must be in place for the financial standards and goals as well as for the dedicated planning and budgeting for the revising of the learning content, the further education of trainers/faculty and staff, as well as for the replacement and advancement of the (technological) infrastructures (see also Glowalla, Grob & Thome, 2001; similar to Quality Assurance Agency (QAA), 1999). As a major goal, the quality and quantity of the needed resources should be described as future-oriented and should be employed
profit-oriented and effective (Rovai, 2003, 114). In particular, steps for quality improvement should be addressed explicitly from a budget point of view and should be planned in front of the appropriate cost-benefit reflections (also see Moore, J. C., 2002, 24) (quality criterion E2).
### 2.3.3 Implementation of EFMD CEL Economical Criteria

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| E1  | The institution should demonstrate that the level of overall resourcing is appropriate to achieve the programme objectives. | SA                        | Reflections addressing the realistic contingencies in financial planning and their impact on financial sustainability, maintainable educational standards and the possibility for all currently enrolled learners to finish their programme. Reflections on the allocation of resources according to the programme objectives. | Appropriateness is assessed against the following financial criteria:  
  - Any variation between the planned and actual financial performance of the activity does not compromise the educational standards (e.g., teacher-learner ratio, class size).  
  - Its net worth is sufficient to assure that all currently enrolled learners can finish their programmes even when assumptions, such as those on the number of students/participant registered, do not correspond with what was projected.  
  - Reflections should be comprehensibly explained. The cost of running the infrastructure includes resources to maintain adequate service levels for the technical infrastructure, support and tutoring. |
<p>| E2  | There is a balance between the running and the advancement of the programme, especially with regard to the technology-enhanced | AT (AV)                   | If the programme is operated on a commercial basis, an appropriate business case should be presented, including information on estimated costs, revenue, partnerships, marketing and sales channels. | Programme executives should be able to provide relevant information that at least reflects the market’s needs and the programme’s sustainability.                                                                                     |</p>
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<td>learning components within it.</td>
<td>on the budget that is needed to adequately run the programme.</td>
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<td>gramme.</td>
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2.4 Technology

2.4.1 Overview of the Technological Dimension

The technological dimension focuses on the adequate functionalities, usability and integration into the existing infrastructure. Reflections on the functionalities and usability build on the widely-acknowledged model of acceptance from Davis. ‘Perceived usefulness’ and ‘perceived ease-of-use’ are the central factors of this model to establish acceptance for IT-solutions (Simon, 2001). In addition to this end-user driven view on technology, the ease of maintenance as well as the administrative aspects should be considered for an organisationally and financially sustainable programme. This implies not only a technically usable and stable environment, but an environment that is integrated both in strategic and operative respects. Finally, as a third important key area that is reflected in the EFMD CEL quality criteria, technical infrastructure investments for delivering and producing the learning content should reflect internationally-recognised standards in order to secure investments and future flexibility.

The key areas are:

- Planning and implementation of the technological infrastructure
- Reliability, stability, usability, and accessibility of the technology used
- Reusability of the technological developments and learning content

2.4.2 Reflection on EFMD CEL Technological Criteria

2.4.2.1 Planning and implementation of the technological infrastructure

In contrast to the voluntary attendance of additional technology-enhanced learning modules, the integration of technology-enhanced learning into existing curricula is considered to be indispensable for sustainable (see Seufert & Euler, 2004, 23) and quality technology-enhanced learning programmes. What is valid for the pedagogical dimension must at least be critically reviewed in the technical aspect. A review of current literature shows a broad consensus that technology-enhanced learning should not have an technologically and organisationally isolated status and should strategically as well as operationally be integrated into the regular organisational structures and working processes (also see Bates, T., 2000, 2f.; Seufert & Euler, 2004, 22) of the responsible institution. “It is essential [...] to have a strategy for developing the technology infrastructure [...]. Priorities must be set on both the level of investment and the areas of investment.” (Bates, T., 2000, 79) (→ quality criterion T2).
In particular, the choice and development of the appropriate educational technologies constitute a central challenge within a holistic IT-strategy. Kerres critically observes that the selection of technologies (or more generally speaking ‘media systems’) is established already prior to the pedagogical analyses (Kerres, 2001, 277). Against Kerres’ postulate of rather independent didactical modes from selected media (Kerres, 2001, 109), Phipps & Merisotis reveal that the technology selection has a high impact on the instructional design (Phipps & Merisotis, 1999, 15). Thus, Kerres confirms as well that the technology selection must be reflected based on the specific pedagogic challenges and that there must not be a random or opportunistic selection of media (Kerres, 2001, 277). Bates (2003, 96) finally suggests to gear the selection of the learning technologies to the vision of teaching and learning that underlies a specific programme (similar Bagusat, 2003, 337). Thus, if the transmission of knowledge is set to be of highest priority, the presentation technologies have rather to be selected; whereas if priority is given to learning scenarios that are based on personal communication, synchronous and asynchronous communication tools should be favoured. Strikingly, Sener & Stover hold (similar as well Tergan & Schenkel, 2004, 4.20/9): “The components that lead to this outcome are the appropriate pedagogy and the use of technology whereby the educational experience desired drives the choice of technology used to benefit and support the student in the best way possible.” (Sener & Stover, 2000, 143) Hence, it’s how the technology fits the pedagogic concepts and learning objectives that should lead the decision-making and not the individual preferences or image reasons with the project managers and decision-makers or even a vague hope of a particular programme’s attractiveness because of a specific new media (see Kerres, 2001, 277). Thus, it should be comprehensibly explained how the technology corresponds to the current and future organisational, economical, strategic and competence-oriented conditions. (→ quality criterion T1).

### 2.4.2.2 Reliability/stability, usability, and accessibility of the technology used

From the many existing user acceptance models (for an overview, see Bürg & Mandl, 2004, 9ff.), the widely cited model from Davis (1989) has been selected to support the subsequent reflections on the reliability and usability of educational technologies. In correlation with the numerous research and theoretical work done, Davis assumes that ‘perceived usefulness’ and ‘perceived ease-of-use’ are the two central determinants for the acceptance of information technologies (Davis, 1989; McGorry, 2003, 164; also see research from Miller, Rainer & Corley, 2003; similar Nielsen, 1993, 25; Simon, 2001, 96ff.; also see Stoller-Schai, 2003, 140). Whereas usefulness was addressed primarily by the pedagogical section of this paper (see section 2.2.2.2), essentially issues of software and hardware handling and systems operations are of interest from a technological point of view. Especially through the consequent integration of educational technologies into the curricula and learning scenarios, new and complex requirements arise regarding the availability of e-collaboration and e-media. For a
high quality learning environment, the stability as well as the reliability of the technology must be considered as very important (see Bates, A. W. & Poole, 2003, 79; Bates, T., 2000, 202; McGorry, 2003, 164; Stoller-Schai, 2003, 139). Accordingly, Cashion holds: „Access, speed and reliability are essential and are crucial to the success of online education.“ (Cashion & Palmieri, 2002a, 11) Supporting this conclusion, various studies show that a lack of reliability and availability as well as an insufficient connection speed (too many downtimes because of administration, long answer times) have a negative impact on quality (Moore, J. C., 2002, 58). While literature shows a common consistency on the necessity for bindingly-defined requirements for the availability and stability (i.e. service-level agreements) of open source and for-profit systems (Kiedrowski, 2004, 5.7/12; PLS Ramboll Management, 2004, 116; Seufert & Euler, 2004, 28), there still remains a gap in the educational sector when it comes to operationalised key figures. However, when defining the required level of availability, the risk of failure (damage, number of affected users, consequences) and the costs of maintenance and security must be considered. It is certain that high availability requirements are very costly (see Brown & Patterson, 2002) because for instance they require redundancy and 24-hour standby support seems crucial that a high availability and reliability rate is fostered when the learning process cannot be continued without electronic support (i.e. missing information, no means of communication in synchronous communication settings) (see the Swiss approach in Regierungsrat des Kantons St. Gallen, 2004, Art. 8). Normatively set, the required availability rate should be above 90 % during a considerable period of time and supported by continuous and fast interventions (within 24 hours) in case of technical failures. As correctly stated in the Brown & Patterson study on technical availability benchmarks, it is of utmost importance how the system interruptions occur; it seems obvious that the impact on user acceptance in the case of continuous, short and unforeseen interruptions is expected to be much more severe than from a single but longer interruption even though the total downtime might be the same in both cases (Brown & Patterson, 2002). Thus, besides the explicit requirements and a thorough continuous measuring of the system’s availability, it is the effective performance in respect to the teaching and learning processes and the perception of the teachers/trainers and the learners/participants that are relevant to evaluate the quality of a specific technology in a specific programme context (similar Schudlen, 1993) (quality criterion T3).

In practice, the ‘ease of use’ of a system is often addressed by the term ‘usability’. However, usability relates to all aspects of interaction between the users and the technological systems (Nielsen, 1993, 25). For instance, ISO defines usability as the efficiency, effectiveness, and satisfaction by which a specific user can reach specified goals in a well-defined environment (see Dillon, A., 2001). Backed up by the basic work done by Nielson, this understanding should be further differentiated (see Nielsen, 1993; in contrast, see the operationalisation in Reglin, 2004, 77ff.; similar to this Yusof & Singh, 2002, 403f.). Hence, usability must not be
seen as a uni-dimensional variable, but must be evaluated in respect to five basic characteristics: (1) ‘Learnability’ expresses the expectation of easy learnable features of the systems. (2) Efficiency requires a system to allow the user to achieve high productivity after a reasonable period of familiarisation. (3) Memorability should allow unsteady users an efficient re-orientation. (4) Correctness of the system and reversibility of wrong commands by the user are essential factors of a holistic usability concept that leads to (5) an overall satisfaction with the system/software (Nielsen, 1993, 26). Miller et al. suggests a strong relationship between the perceived ease-of-use and the time a user spends on working through the electronic learning contents (Miller et al., 2003). Other authors as well put much weight on usability reflections when designing and implementing learning contents and systems. Foremost, the standardising of the navigation elements and structures should prevent a cognitive overload while working on the learning contents (see Doberkat et al., 2000, 113). By doing so, the concept suggests that a learner’s scarce mental resources (attentiveness, cognitive and meta-cognitive capacity) can be geared up to accomplishing the learning task and is not consumed by constant search and reorientation (Arnold, 2001, 91; Hartwig, Triebe & Herczeg, 2002, 321) (\(\rightarrow\) quality criterion T4).

Beside the availability and reliability of the learning environment and the usability of the learning contents and functionalities, the accessibility of educational software is characterized by a third essential requirement for high quality programmes. In respect to ‘accessibility’, literature contains two major lines of thought. On the one hand, Bates holds that accessibility is mainly about non-discrimination concerning the bandwidth needed to access a certain learning content (see Bates, A. W. & Poole, 2003, 81); hence accessibility becomes important if a learning scenario makes use of digital video libraries and not all the students have the technical means to access these resources. On the other hand, however, accessibility is used more and more in the context of empowering disabled people (i.e. in the case of reduced vision, colour-blindness, deafness) for an equal use of learning contents (Burgstahler, 2002; Dirr, 2003, 466; Foley & Regan, 2002; French & Valdes, 2002; Kearsley, 2002, 43; Ommerborn & Schuemer, 2002). Users who are blind or with reduced vision use, for example, so-called ‘screen readers’ or ‘Braille-displays’ to ‘view’ the content of websites or more specifically to allow the contents to be displayed on a sensory interface. Such tools have only a limited capacity to display graphics and complexly designed layouts. Thus, it is important that the images are comprehensibly described in formats that allow such tools a respective processing (Foley & Regan, 2002; Robertson & Harris, 2003). Increasingly, the importance of reflections on accessibility is underpinned by the use of touch screens or head pointers as alternatives to the commonly used mouse. Disabled learners use pointers or big touch sensitive interfaces to activate links, fill in forms or write e-mail messages. When using such alternative tools, it is essential that all forms and site navigation work without using a mouse. Rollover-effects, dropdown menus or interactive simulations however are examples of how
often applications require the use of a mouse for proper user intervention. To be clear, the use of a pc mouse is not bad per se from an accessibility point of view; however, it is strongly recommended to consider all the interface tools in respect to the targeted audience. Despite many existing accessibility guidelines, Paolucci holds critically the view that only a very few web sites of the educational institutions meet the proposed minimum standards (Paolucci, 2004). The most important and most widely cited accessibility guidelines consist of both privately (i. e. by international enterprises) and governmentally (i. e. by legislations) driven initiatives (overview based on an extended and updated list from Cedefop, 2002, 73; similar Foley & Regan, 2002):

- W3C accessibility guidelines for web content:  
  http://www.w3.org/TR/2000/NOTE-WCAG10-TECHS-20001106/ (01.01.2005)
- IBM accessibility guidelines:  
- Microsoft accessibility for everyone:  
  http://www.microsoft.com/enable (01.01.2005)
- Section 508 of the US rehabilitation act:  
  http://www.section508.gov (01.01.2005)
- „The 2001 U.S. Market for Accessible e-Learning“:  
  http://www.brandon-hall.com (01.01.2005)
- „Auf dem Weg zu einem Europa ohne Hindernisse für Menschen mit Behinderungen. Mitteilung der Europäischen Kommission“:  
- Bobby:  
  http://www.cast.org/bobby/ (01.01.2005)
- „Design for All”, CEN/ICTSB:  

Beside the ethical claim for the equality and non-discrimination of disabled people, there are numerous other reasons that underpin the importance of dedicated accessibility reflections. As such, more and more important countries (like the European Union, USA, Canada) require governmental institutions, educational institutions and non-profit-organisations to respect basic accessibility guidelines set by law (see Foley & Regan, 2002; McGrath, Middleton & Crissman, 2002, 91; for Germany see Ommerborn & Schuemer, 2002, 49; see Witt & McDermott, 2004, 45; Worldwide Universities Network, 2003, 1). Foley emphasises that the basic incorporation of accessibility guidelines not only means an advantage for disabled people but generally leads to better designed, faster loading and more clearly laid out web
pages (Foley & Regan, 2002; Robertson & Harris, 2003). Additionally, the introduction of the binding QAA code of practice on ‘students with disabilities’ in England gives another indication of the increasing importance of ‘no constraints’ for electronic learning contents (see Webb, 1999). Webb holds that the costs for accessible learning contents are not prohibitive at all as long as the relevant requirements were integrated already during the design and implementation phase (Webb, 1999). But at the same time he warns: “It could be very expensive, for example, if an institution has to completely re-write its web pages and computer-based learning packages or provide an alternative learning methodology for those students who cannot use them in order to comply with the requirements of the QAA assessors or in response to legal action from a disabled student.” (Webb, 1999) Respecting this, high quality educational programmes should be designed in accordance with the above-listed and internationally accepted accessibility guidelines. If a programme addresses target groups from countries that require educational institutions to fulfil specific accessibility requirements by law, this also becomes automatically a mandatory quality requirement for EFMD CEL Accreditation and the Accreditation seeking programme should prove comprehensibly its compliance (quality criterion T4).

2.4.2.3 Reusability of technological developments and learning content

The importance of the use of technical standards is getting increasingly important for quality online distance learning. Standards and frameworks like Learning Object Metadata (LOM) or Sharable enable the interoperability of learning management systems and as a consequence help to protect investments. Hence technical standards are useful for the describing, reuse and modelling of the learning content and become more and more crucial for economically and qualitatively successful technology-enhanced learning programmes. But despite all of the advantages which technical standards may have, they have until now not become mandatory for online learning programmes. As of today, the many standardizing initiatives and their developments are hardly to be overlooked (see also Pawlowski, 2004, 94f.); because the existing standards are not binding and are changing rapidly, it is difficult to name a relevant and valid set of some of the technical standards that should be made mandatory for quality accreditation. However, an important indicator of relevancy of a technical standard is its acceptance in daily business. As in any network, its value rises potentially in proportion to the number of users. Hence experts’ expectations towards market acceptance may be a good indicator against which technical standards should be considered for evaluation. As Pawlowski concludes in his valuable review on the current and future learning standards, it
can be expected that Learning Object Metadata (LOM), Content Object Reference Model (SCORM) and IMS Learning Design will make their way in the near future (see criterion T6).

Because of the rising costs of development and maintenance for electronic learning contents, there is a basic need to improve economies of scale: for example, to allow a broader use of the contents among the different target groups and in various contexts (Doberkat et al., 2000, 19) and to protect the investments made (similar Frydenberg, 2002; Pawlowski, 2001, 64). Thus, discussions on the metadata standards have to be considered in this section because standardised metadata constitute a specific requirement to ensure the future reusability and hence help to protect investments in educational technologies and content (Kleimann & Wannemacher, 2004, 88; Pawlowski, 2005, 456f.; see PLS Ramboll Management, 2004, XXI, XIX; similar Seufert & Euler, 2004, 30). The incorporation of metadata standards mainly serves three objectives (according to Ehlers, Pawlowski & Görtz, 2003, 4.8/12; similar Pawlowski, 2001, 90):

- **Interoperability and portability:** To allow the technology-supported learning scenarios to work on the basis on today’s variety of mostly proprietary learning management systems, authoring, collaboration, and communication tools, the learning contents must respect a minimum of standardisation. The objective should be that the contents and products may run independently of a specific learning management system or authoring tool and that they are flexibly combinable with alternative software solutions.

- **Reusability:** To improve the reach and hence the likeliness of profiting from economies of scale, the modules and components should be made accessible in different contexts. Reusability also helps to secure investments in technology and content because the same content can be reworked and used in other systems.

- **Transparency:** To protect customers’ interest, standards may help to improve transparency analogous to standard information like expiration date, price, and perhaps hints for preparation on groceries. Thus standardised information on the learning modules should improve learners’ orientation and allow them to make a well-founded decision on what kind of education they want to start.

Despite the growing dissemination of didactical standards, the rate of reuse of the learning contents is considered as rather low. This can be tracked down to the perception of many faculty members and teaching staff who feel that this would affect their didactic creativity and freedom of diversity (Pawlowski, 2005, 456; Seufert & Euler, 2004, 25). The existing approaches to didactical standardisation tend to focus on the granularity of the learning objects which allow for a mechanistic reuse (see Goertz, Johanning & Michel, 2004, 38). However, the didactical structures, links and concepts must still be considered as a weak point (Ehlers et al., 2003, 13). Thus, newer movements within the Shareable Content Object Reference
Model (SCORM), for example, try to tackle these challenges. Still, the metadata standards have to be considered as developing rather than as matured and settled (in accordance to Seufert & Euler, 2004, 25); as such, slowly a few standards have begun to prevail (i.e. AICC, LOM und SCORM) (see Pawlowski, 2004, 94f.; also see PLS Ramboll Management, 2004, XIX). Difficulties in establishing binding standards are mainly due to the particular interest of the e-Learning providers to link the customers closer to their own products by proprietary standards. Another important reason is certainly the vast amount of time needed for authors to enter and maintain accurate metadata which will remain a considerable obstacle in implementing comprehensive metadata standards into practice (Oppermann & Specht, 2003, 10). Considering the maturing and very much changing heterogeneous factors currently ruling the standards movement, a binding definition which standards would be required to follow seems ineffective. Nonetheless, it must be upheld that the use of metadata standards has to be appreciated (similar conclusions in Unicmind, 2002). More important however is the reflection on the programme specific measurements that have been taken to ensure sustainability and protect investments in case of technological changes. Thereby, respecting standards may be one compelling issue. Should case standards not be respected, there should be an explanation on why respecting the standards does not make sense (i.e. cost-benefit-ratio, specific technological context) (→ quality criterion T5).
### 2.4.3 Implementation of EFMD CEL Technological Criteria

<table>
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<tr>
<th>#</th>
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<th>Method of data-collection</th>
<th>Performance indicators</th>
<th>Auditor</th>
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</thead>
<tbody>
<tr>
<td>T1</td>
<td>The choice of technologies is based on their appropriateness for the pedagogical concept and takes into account both the students/participants and teaching staff.</td>
<td>SA</td>
<td>Reflection on the appropriateness of the selected technology (functionalities) for the pedagogical concept.</td>
<td>Comprehensibly explain the technology’s appropriateness for the pedagogical concept as well as well as the relevance to the students/participants and teaching staff.</td>
</tr>
<tr>
<td>T2</td>
<td>There is an IT-strategy with regard to the implementation of technology-enhanced learning which describes the technology currently used, its maintenance and considerations for future advancement.</td>
<td>Doc</td>
<td>Documentation of the programme’s or institution’s IT strategy.</td>
<td>Explicitly explain the IT-strategy as relevant for the programme.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA</td>
<td>A self-reflection explaining the context of the current technology-enhanced learning implementation and reflecting the IT-strategy relevant for the programme.</td>
<td>Clear and comprehensible self-reflection should include the IT-strategy and special features (e.g., functionalities) so far.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Reflection of the IT-strategy in respect to the learning goals, programme objectives and financial resources.</td>
<td>IT-strategy and teaching staff’s abilities and financial resources must be consistent.</td>
</tr>
<tr>
<td>T3</td>
<td>The reliability of the technology-delivery system is monitored and documented. Service-level agreements for hardware and software reliability are in place and operational.</td>
<td>Doc</td>
<td>Information on existing service-level agreements with technology providers or the responsible internal department and on effective server down-times (expected vs. non-expected, effective reaction time, performance issues).</td>
<td>Availability of the infrastructure (incl. hardware) should be at least 90%. There should be a satisfactory reaction time in case of malfunctions of a 24 hr support system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (SI)</td>
<td>Student’s/participant’s satisfaction with the availability of the technical infrastructure.</td>
<td>Students should be satisfied with the availability of the technical infrastructure.</td>
</tr>
<tr>
<td>T4</td>
<td>Technology-enhanced learning delivery follows best practice recommendations concerning usability and accessibility.</td>
<td>SA</td>
<td>Reflections on how the programme secures the usability and accessibility of the learning software that is internally developed or externally purchased (off-the-shelf or custom-made content).</td>
<td>Consistent usability and accessibility of the learning software. Programmes should provide evidence on their compliance with legal accessibility guidelines (e.g., compliance with specific regulations).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (SI)</td>
<td>Student’s/participant’s satisfaction with the usability and accessibility of learning content.</td>
<td>Students should be satisfied with the usability and accessibility of learning content.</td>
</tr>
<tr>
<td>T5</td>
<td>The technology applied allows for the future reuse of content and information and supports sustainable development.</td>
<td>SA</td>
<td>Reflections of how the technologies used by the programme tackle future technical challenges in respect to authoring tools, the purchase of third-party content as well as in respect to the technical delivery of learning content. Reflections should focus on the future reuse of learning content.</td>
<td>Reflections should critically assess the technical infrastructure in respect to future developments and the future reuse of already developed learning materials. In particular, reflections should focus on the use of learning metadata standards like Learning Object Metadata.</td>
</tr>
</tbody>
</table>
2.5 Organisation

2.5.1 Overview of the Organisational Dimension

One crucial key for sustainable technology-enhanced learning implementations certainly lies in the organisation's flexibility to embrace innovation and change (see Seufert & Euler, 2004, 31). From a quality research point of view, this results in three primary directions of impact. First, transparent structures and processes are the necessary preconditions for affordable and sustainable support of which the presence or absence is again a key factor in technology choice and use (Bates, A. W. & Poole, 2003, 103). The qualifications and the continuing further education of employees (faculty, trainer, administrative personnel) as well as the organisational future advancement are two other important aspects that have to be evaluated in an organisational quality dimension. Thus, the overarching goal of the organisational dimension is to improve the flexibility and adaptability of the programme's organisation and administration through encouraging efficient structures and working processes.

The key areas are:

- Organisational model and supporting operations of the programme
- Qualification and competence development of faculty/trainer and staff
- Focus on continuous improvement of quality and responsiveness to quality issues

2.5.2 Reflection on EFMD CEL Organisational Criteria

2.5.2.1 Organisational model and supporting operations of the programme

The recognition of the importance of well working administrative processes and good administrative support is one of the key results of many years of educational quality research and is becoming more and more an accepted direction within literature (see also Hawkins, 1999; see May & Short, 2003, 686): “A properly-functioning ICT organisation and support structure can be a driver for ICT integration and educational technology, and is a precondition for the successful application of ICT in all aspects of a university's activities.” (PLS Ramboll Man-
In this context, many international studies and authors emphasize the importance of faculty support when implementing high quality technology-supported programmes (see Bates, A. W. & Poole, 2003, 278; Holm, Franzen & Gröhbiel, 2002, 20; Kleimann & Wannemacher, 2004, 52; Lee, 2001, 158; McGorry, 2003, 162; Phipps & Merisotis, 2000; Zawacki, 2002). A US-study by the Council of Regional Accrediting Commissions (C-RAC), which was initiated by the Western Cooperative for Educational Telecommunications (WCET), was targeted towards the identification of the main elements of high quality online distance education programmes and revealed teacher and trainer support to be a very central success factor (WCET, 2001). “Faculty members need much more support and encouragement than has been provided to date for their use of technology for teaching and learning. [...] Teaching with technology requires a high skill level, and this necessitates training not just in technical matters but also in educational practice.” (Bates zit. in Zawacki, 2002)

In the SME (small and medium-sized enterprises) as well, a recently published study shows the importance of an adequate support of the teaching personnel when they are supposed to initiate and accompany technology-supported learning processes (Fischer et al., 2003, 15) (→ quality criterion O1).

There exists another very large consensus in literature concerning the importance of learner support: “The quality of a distance learning programme does not […] only depend on the effective transmission of contents, but also on the quality of learner support” (Cashion & Palmieri, 2002a). Many authors agree to these arguments (see Fraunhofer IPSI, 2003, 16; Frydenberg, 2002; Kleimann & Wannemacher, 2004, 52; Laur-Ernst, 2004, 13; Palmerio, 2003, 99; Simonson & Bauck, 2003, 421f.). It seems obvious that the target groups must be clearly defined and known to properly address their needs concerning the preparation, processing and post-processing of the educational modules (Schüpbach et al., 2003, 166). The support services must not only be understood as pedagogic support, but also as technical support and perhaps as a form of systematic introduction to self-studying and used tools (also see results in Cashion & Palmieri, 2002b, 59; see results in Holm et al., 2002, 10). Because of the very heterogeneous needs in respect to the support services and restricted budgets, Hughes demands a balance between “just-in-case” (i.e. support of a specific infrastructure) and ‘just-in-time’ services (i.e. immediate feedback in case of technical problems) (Hughes, 2004, 368). A study on the support expectations from the students/participants, recently presented by Smith reveals the high importance of timely feedback for successful learning processes (similar Moore, J. C., 2002, 57; Muirhead, 2000, 4; Smith, A., 2004a, 28, 37; also see the results in Tobin, 2004). Holmberg (1989, 162), widely regarded as a seminal author in the field of distance and open education, supports these findings with his work done on the emotional involvement between teachers, learners and the educational institution (similar Graham et al., 2000, 3) (→ quality criterion O1). In accordance with the recently published CEDEFOP study, it is of utmost importance not only to recognise and communicate
support services (see Cashion & Palmieri, 2002b, 60; Frydenberg, 2002), but also to budget them on a sustainable basis to make them reliable (Cedefop, 2002, 31).

In this context, explicit working processes must be seen as an essential precondition for the functioning support and administrative services (Austin, 2001, 251; Bates, A. W. & Poole, 2003, 102; see the positive impact on teachers’ satisfaction in Owen et al., 2004, 12; see Rogers, 2001) (→ quality criterion O3). Austin especially demands appropriate process definitions from the distance learning institutions: “Importantly, every distance education institution must define its processes and ensure the integration of these processes.” (Austin, 2001, 251). Generally speaking, clear company and process organisation as well as explicit decision-making and participatory structures are important for quality technology-supported programmes (also see Wirth, 2005b, 153ff.) (→ quality criterion O3).

Concerning the implementation of educational technology, Kerres holds: „Mediale Lernangebote lassen sich nicht in ein Bildungssystem einführen ohne grundlegende Überlegungen zur Aufbau- und Ablauforganisation von Bildung.“ (Kerres, 2001, 93) By saying this, he assumes that technology-enhanced learning is most likely to change the organisational as well as the process structures in any institution that is willing to implement educational technology deeply within its learning culture and that is not just about an educational technology pilot. According to research devoted to this topic in the field of distance education, he identifies processes for media production on the one hand and the processes with coordinative and communicative purposes on the other hand to be crucial (see Kerres, 2001, 309). Following Peters, the division of labour must be considered more fragmented with technology-supported programmes than with a traditional presence-oriented education (Peters cited in Kerres, 2001, 310; also Tobin, 2004). Thus, Schulmeister claims to integrate the educational technology oriented processes (with respect to the disposable financial and personal resources) into the standard organisation of an educational institution (Schulmeister & Wessner, 2001, 22). Seufert & Miller as well emphasise that it is mainly about the definition of explicit and dedicated roles and functions, including the respective financial, organisational, and processual planning, that finally supports the sustainability of an innovation (similar Kerres & De Witt, 2002, 14; see Owen et al., 2004, 17, 33; Seufert & Miller, 2003, 11), which is mainly confirmed by a traditional school effectiveness research. Further detailing this, it can be assumed that an optimal organisation and process structure depend on the maturity of a specific programme. Whereas creativity would be stifled by rigorous regulations during the innovation phase, there would be a lack of efficiency and effectiveness with more established programmes without binding decision-making guidelines and hierarchies. Hence, it’s relevant for a high quality programme to reflect the appropriateness of the relevant processes in respect to the targeted programme’s objectives, the institutional background (see Schoenwald, Euler & Seufert, 2004, 32, 36ff.), and the specific development stage of the
Furthermore, it is essential not only to draft processes but to implement and communicate them to the practitioners, advance the processes as the programme progresses and make them transparent and comprehensible to the administrators and teachers/trainers (see Austin, 2001, 251) (à quality criterion O3).

### 2.5.2.2 Qualification and competence development of faculty/trainers and staff

In literature, there is a broad consensus on the relevancy of a teachers’ qualifications and the competency development measurements for quality technology-supported programmes (see Caplan, 2004, 182; Frydenberg, 2002; Graham et al., 2000; Seufert & Euler, 2004, 22; see Spiess, 2000, 44). As part of this consensus, continuing further education and development is part of many internationally renowned quality management approaches like EFMQ or ISO. It is essential however to guide offerings close to the needs of the teachers/trainers on the one hand (Rovai, 2003, 114) and to the targeted and used technology-enhanced scenarios on the other hand (Behrendt et al., 2004, 21f.). Therefore, it should be continuously assessed whether or not the wants and needs of the relevant stakeholders have been met. In this sense, it is essential to have educational measures for the learners/participants but as well as for the teachers/trainers to ensure the effective and efficient use of technologies even though educational software solutions have been usability tested (Bates, T., 2000, 202). A study by the EU Commission results in a similar conclusion: “Teacher education appears as one of the most important arenas for addressing the integration of ICT in education.” (similar Clay, 1999; Europäische Kommission, 2003, V) Eaton and Rovai criticise however that against the above-mentioned insight, many teachers and trainers are put in charge without a prior corresponding training or without having the necessary experience to effectively and efficiently lead and accompany online learning (see Eaton, 2000; similar Rovai, 2003). Accordingly in her study on the tertiary education sector in Kentucky, USA, Wilson reveals a considerable uncertainty in respect to the efficiency of technology-enhanced learning scenarios which she tracks back to insufficient institutional preparation and high time pressure (Wilson, 2001, 71). Taking up these arguments, it is essential to foster and institutionalise further education for teaching and administrative staff and to introduce this as a central quality criterion for technology-supported programmes (à quality criterion O2).

### 2.5.2.3 Focus on continuous improvement of quality and responsiveness to quality issues

Even the most extensive tests cannot guarantee that all the pitfalls have been avoided, all the faults have been detected and all formulations are perfectly appropriate (also Schulden, 1993; Schüpbach et al., 2003, 183). Establishing an understanding of this matter-of-fact and
in parallel ensuring responsiveness to the quality issues helps to raise the students’ tolerance limit and improves learner satisfaction. Obviously, the faculty and institutions must also have a real commitment to quality improvement and the assessment of student learning, including an emphasis on the evaluation of the distance education programmes and courses (Meyer, 2002, 90). Thus, the importance of continuing quality assurance and improvement is acknowledged in literature (Apostolopoulos et al., 2001, 14; Roche, 2002; Smith, K., 2004b, 405) through a variety of case studies (z. B. Bagusat, 2003, 344) as well as by many existing quality frameworks (EFQM, ISO, a. o. m.). Also, research on school effectiveness points out the importance of ‘learning’ and ‘self-reflexive’ educational institutions (see Fend, 2000, 59). Accordingly, Koller et al. (2001, 5) hold: „Eine Verbesserungskultur wird nicht mehr als Ausnahme, sondern als ständig geltende Verhaltensregel verstanden.“ (similar Austin, 2001, 253; see also Maguire & Heath, 1997, 27; McGorry, 2003, 161). These authors all emphasise the transition from quality as an exception to quality as a culture and as a pervasive attitude. Facing the broad criticism of the classic forms of accreditation (Danish Evaluation Institute, 2003, 9; Distance Learning Policy Laboratory, 2002, 10; Gates et al., 2002, 73; Genis, 2002; Harvey, 2002; Jeliazkova & Westerheijden, 2001, 2f.; Leef, 2003, B17; Newby, 1999, 263, 264; Newton, 2002; Van Damme, 2002, 8), it is not only key to establish a pronounced quality consciousness among the programme managers but also to implement and supervise the appropriate responsibilities, processes and roles in respect to continuous quality evaluation and improvements: “If responsibility for quality does not lie with those responsible for learning and if it is not continuously addressed by them, then the message is given that quality is felt as unimportant.” (Newby, 1999, 264). Based on an analysis of the existing quality approaches (Wirth, 2005c, chapter 4), consideration should be given to aspects of learning efficiency and effectiveness, the learner/participant and teacher/trainer satisfaction, the drop-out ratios and a comparison of its variation over time as well as the economical efficiency and profitability (controlling) (similar Frydenberg, 2002) (→ quality criterion O4).

As part of such a culture of improvement, the responsiveness to the students’/participants’ suggestions, needs and complaints is highlighted (see McNaught, 2002; Meyer, 2002, 81; Srikanthan & Dalrymple, 2002, 218). In general, it can be held that the programme management’s openness toward criticism and suggestions raises the learners’/participants’ tolerance for technical and textual insufficiencies insofar as the observable measurements and improvements are finally implemented (see Harvey, 2002, 11). The responsiveness to students’ input and their wants and needs must be considered to be an essential factor for student satisfaction and needs adequate attention (see Srikanthan & Dalrymple, 2002, 219). It can be concluded that this results in a binding commitment of the employees and teaching personnel to continually evaluate the educational measures as well as the strategy and resource-guided implementation of suggestions for improvements (Meyer, 2002, 90; Moore, J. C., 2002, 58) (→ quality criterion O5).
## 2.5.3 Implementation of EFMD CEL Organisational Criteria

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<tr>
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<th>Method of data-collection</th>
<th>Performance indicators</th>
<th>Auditor quality evaluation standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1</td>
<td>The institution is able to demonstrate the existence and operation of the necessary infrastructure and support for the programme.</td>
<td>Doc</td>
<td>A document describing the programme’s existing infrastructure and support services.</td>
<td>The programme should provide the students/ participants and teaching staff with reasonable technical support for the IT applied in running the programme’s technology-enhanced learning components (e. g. practice sessions prior to the beginning of the course if necessary, easy access to the technical support staff).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Satisfaction of the faculty with the existing infrastructure.</td>
<td>Faculty and staff demonstrate a clear understanding of the infrastructure necessary to run the course.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (SI)</td>
<td>Students’/participants’ knowledge and satisfaction with the provided support.</td>
<td>Students/participants show a high satisfaction with the provided technical and administrative support.</td>
</tr>
<tr>
<td>O2</td>
<td>There is a competency development policy for the staff involved in the design and running of the courses, especially those with technology-enhanced learning components.</td>
<td>SA</td>
<td>A description and reflection on the programme’s competency development policy for its teaching staff with specific reflections on the existing training facilities for the staff involved in the design and running of the courses.</td>
<td>A comprehensible and convincing description of the provisions within the programme clearly devoted to competency development of the teaching (especially aspects like e-tutoring, e-coaching, moderation techniques) and administrative (especially aspects like course management, software competency) staff.</td>
</tr>
<tr>
<td>#</td>
<td>Quality criteria</td>
<td>Method of data-collection</td>
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<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Satisfaction of the teaching and administrative staff with competency development opportunities.</td>
<td>High satisfaction of the staff on the efficiency and effectiveness of the current competency development provisions.</td>
</tr>
<tr>
<td>O3</td>
<td>The definition of the work processes for implementing the programme’s technology-enhanced learning components must be transparent for those involved in the programme’s implementation.</td>
<td>AT (AV)</td>
<td>Interviews with involved teaching and administrative staff show the transparency of the existing work processes.</td>
<td>A clear understanding of the different roles and work processes must be observable among the teaching and administrative staff.</td>
</tr>
</tbody>
</table>
| O4 | The institution conducts a programme of continuous quality evaluation directed towards programme improvement. | Doc |  - A document that describes the programme's quality and evaluation processes and instruments and addresses aspects like the teaching performance, the pedagogic quality of the programme and the effective use of resources.  
   - Results of the most recent quality evaluation. | Clear and comprehensible quality and evaluation processes must be described, including for example:  
   - Evaluation of student/participant satisfaction after each module (desired) and at the end of the programme (must).  
   - Evaluation addressing the appropriateness of the learning content.  
   - Evaluation of the students'/participants' learning experiences and learning success. |
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<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Reflections providing evidence of how the programme executives intend to deal with evaluation results.</td>
<td>Clear and comprehensive statements and a strong commitment to quality improvement must be observable.</td>
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<tr>
<td>O5</td>
<td>The institution is responsive to student/participant complaints concerning the courses, especially those with technology-enhanced learning components.</td>
<td>SA</td>
<td>Reflections on how student/participant complaints are sought and dealt with and how complaints have been used so far to improve the programme.</td>
<td>A comprehensible and convincing description and reflection of activities that show a high level of responsiveness to complaint issues and that provide evidence that the programme responsible used this feedback for continuous improvements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (SI)</td>
<td>Learners'/participants' satisfaction with the complaint mechanisms.</td>
<td>Students/participants feel satisfied with the way in which programme executives and teaching staff handle and adapt the programme to complaint issues.</td>
</tr>
</tbody>
</table>
2.6 Culture

2.6.1 Overview of the Cultural Dimension

The socio-cultural dimension focuses on the integration of technology-supported higher and further education programmes into traditional practices (i.e. vocational further education within an enterprise, academic higher education) and the resulting consequences in respect to a change in habits and attitudes (see Euler, D., 2003). As a general rule, the implementation of technology-supported learning scenarios leads to new organisational structures (Barnett, McCormick & Conners, 2000; see also Schoenwald et al., 2004, 34f.) and other teaching and learning cultures which probably have only limited compatibility with the existing cultures and may even be at odds with them (see Wirth, 2005a, 383f.). Often learning scenarios lead to reluctance and rejection that must be addressed by change management activities when hired teachers are less information brokers than moderators of learning processes and are paired with the challenge to take on new and unusual media (Euler, D., 2003). In this sense, the planning of the shaping and advancing of the cultural aspects as well as the passion and motivation of the teachers/trainers and the students/participants towards innovative ways of learning are considered to support high quality programmes.

The key areas are:

- Planning of implementation and advancement of innovation
- Employee and teacher engagement and appealing incentives

2.6.2 Reflection on EFMD CEL Cultural Criteria

2.6.2.1 Planning of implementation and advancement of innovation

Some important and central quality factors can be drawn from more than 50 years of research in school effectiveness. As one of the major results, Renchler clearly sets top priority on high expectations towards the students: “Challenging expectations towards students is one of those criteria that play a crucial part for the students learning success. “ (Renchler, 1992, 4) Hence, good schools presume that each and every student/participant is willing and able to learn and thereby expect excellent results. The positive impact of the school’s/institution’s expectations toward the students’ learning success has been confirmed by a large number of international studies on the quality of schools (Dubs, 2003, 20; see Fend, 1998, 367; Posch & Altrichter, 1997, 18; also Tobin, 2004) (→ quality criterion C1).

As with most complex innovations, it is difficult to decipher and predict exactly what measures lead to what benefits and finally to an innovation which is successful and sustainable.
However, research on quality education has impressive empirical evidence to suggest that the mediating variable school culture can make a programme motivating or not (Barnett et al., 2000; also Bryk, Lee & Holland, 1993). A positive culture is associated with higher student motivation and achievement, improved teacher collaboration and improved attitudes among the faculty and trainers toward their jobs. In sections 2.1.2.1 and 2.2.2.1 of this paper, the importance of the programme and learning objectives was already corroborated. Furthermore, culture as a very important factor determines the context-specific delimiters that may or may not support the innovative use of educational technology (also Koller et al., 2001, 19; see Wirth, 2005a, 384ff.). As such, the learning culture is a field of activity and the starting point of any technology-enhanced learning implementation (→ quality criterion C1).

An often heard argument is that innovations with compelling customer benefits get implemented without any additional accompanying measure (see the criticism in Koller et al., 2001, 19). This is especially false in the educational sector. Even very convincing approaches with proven customer benefits, e. g. in the pedagogical dimension, face indelible resistance that may hinder or weaken the innovation process. Various studies point to the lack of competencies among the teaching personnel that becomes the bottle neck of basic educational innovations (see PLS Ramboll Management, 2004, XI). This finding is supported by Caplan’s statement that “many of the skills that faculty had honed in face-to-face settings no longer apply online; and some teachers must “unlearn” certain teaching methods as much as they need to learn new ones. For the sake of the both teacher and learner, the faculty should undergo some training before launching into the online teaching arena.” (Caplan, 2004, 182) Beside competency development on the basis of an appropriate human resources development strategy in the organisational dimension, Seufert & Euler reveal by their Delphi-study the importance of fostering a cooperative culture for the engagement of teachers and trainers (Seufert & Euler, 2004, 22). This conclusion is mainly supported by the results of research done on school effectiveness (Mayer, D. P. et al., 2000, 41). A major component of this research revealed that a regular exchange among the teaching personnel is considered to act as a facilitator and accelerator of cultural change (see the empirical work of Levin et al., 2001, 5). As a consequence, a thoughtful and systematic approach that addresses the central resistances (see Moore, J. C., 2002, 36) as well as sets appealing incentives seems vital. (Julius, 2000; see Srikanthan & Dalrymple, 2002, 221). In the corporate and academic sectors, organisational as well as individual change may be supported and slightly sped up (Koller et al., 2001, 19) (→ quality criteria C2).

Impressively confirmed by many different case studies (Bagusat, 2003, 336; see Gates et al., 2002, 13f.; see e. g. Günther & Mentzel, 2003, 298; Zawacki, 2002), it is very much agreed in literature that the institution’s or the programme management’s commitment and leadership is a very important precondition to high quality educational technology (Frydenberg, 2002; see the negative example in Johnson, 1993, 225; Koller et al., 2001, 4.9/6f.) Despite
inconsistencies in literature (see the analysis in Marcus, 2004), some essential aspects of leadership may be identified and captured: as such, leadership should foster a shared focus among the relevant stakeholders on the goals agreed upon, leadership should support initiating and implementing change, leadership means taking on responsibility, leadership should support teaching personnel and set out clear priorities in favour of teaching and learning (Barker, Wendel & Richmond, 1999; Haworth, 1997, 32, 58; Mayer, D. P. et al., 2000, 38). According to the analysis by Marcus, it is important for the implementation of effective technology-enhanced learning leadership to drive technological innovations as well as to advance the persuasion of educational technology as a valuable teaching and learning method (Marcus, 2004) (→ quality criterion C4).

2.6.2.2 Employee and teacher engagement and appealing incentives

As research clearly demonstrates, teacher satisfaction, motivation and enthusiasm have an important impact on the students’ learning success (see the empirical research in Hartmann et al., 2000) and hence strongly influence the quality of technology-supported programmes. At the same time, this implies that a teacher’s qualifications are surely an important input factor but the sole orientation and fixation of this variable is not effective. Research results from higher education and technology-supported programmes in particular show that the perception and attitudes of teachers towards new media are of utmost importance for the learning scenario’s success (see Dillon, C. L. & Walsh, 1992; see Ditton, 2000, 88; May & Short, 2003, 675). Accordingly McNaught (2003, 301) holds: “Having teachers who are engaged in their e-teaching is an essential pre-requisite for having students engaged in their e-Learning.” (similar Europäische Kommission, 2003, 9; see also Glowalla et al., 2001, 60f.) Collis & van der Wende conducted an international comparison study and were looking for different triggers for the motivated and engaged use of new and innovative forms of teaching and learning (see Collis & van der Wende, 2002). As one of their conclusions, they identified as much more successful the institutions which integrated the successful use of educational technology into their advancement and tenure decisions and also into their regular reporting systems (see Collis & van der Wende, 2002; similar conclusions in Tobin, 2004; see also Zawacki, 2002). This insight is very much in line with the current research on the quality of teachers which in turn additionally highlights the monetary aspects of entering the salaries and competitive salary structures (for both aspects see Harvey, 1996, 6f.), the lack of appreciation and the workload issues (also Frydenberg, 2002; see Moore, J. C., 2002, 36; for workload issues see Zawacki, 2002). Thus it becomes obvious that incentives have a considerable impact on the quality of technology-supported programmes. Following this argumentation, appropriate extrinsic incentive structures (i.e. salaries and other financial incentives) can be found on the one hand, but also more importantly intrinsic incentives on the other hand like tenure and understanding and the wants and needs for new ways of teaching (also Cashion & Palmieri, 2002b, 73; similar Graham et al., 2000; also see example in Hart-
mann et al., 2000, 164; see the empirical research in Lee, 2001, 160; similar Smith, K., 2004b, 405) (→ quality criterion C3).

As shown by many research papers, the workload (Austin, 2001, 252f.; Brennan et al., 2001; Moore, J. C., 2002, 36) as well as copyright issues have a considerable impact on the teachers’ motivation when moving towards innovative learning scenarios (Deubel, 2003; OECD, 2001, 72; Salmi et al., 2002, 90; Simonson & Bauck, 2003, 421; University of Illinois Faculty Seminar, 1999, 3). In particular, an OECD study highlights the fundamental goal conflicts between more and more powerful authoring tools that allow regular teachers to work on complex multimedia learning content on the one hand and tendencies that let institutions claim their rights on the learning content produced by their faculties on the other hand (similar Lipinski, 2003, 482f.; OECD, 2001, 72; University of Illinois Faculty Seminar, 1999, 3). Hence, the decision-making and participatory structures should be explicitly defined and the workload and intellectual property issues should be tackled by appropriate guidelines and recommendations that are operational (→ quality criterion C4).
### 2.6.3 Implementation of EFMD CEL Cultural Criteria

<table>
<thead>
<tr>
<th>#</th>
<th>Quality criteria</th>
<th>Method of data-collection</th>
<th>Performance indicators</th>
<th>Auditor quality evaluation standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>There are clear and demanding expectations towards the students/participants and teaching staff, as a major pillar of the programme’s learning culture.</td>
<td>SA</td>
<td>Self-reflection on the expectations towards the students/participants and teaching staff and the targeted learning culture.</td>
<td>Meaningful and comprehensible reflections that demonstrate a clear understanding of the learning and teaching culture, including a reflection on the learners and teachers which the programme strives for (e.g. self-regulated learner, teacher as a facilitator and enabler of learning).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Reflection on the appropriateness of the learning culture with respect to the stated programme and learning objectives.</td>
<td>Convincing consistency of the reflected learning culture, the targeted learners, the capabilities of teaching staff, learning goals and presented content.</td>
</tr>
<tr>
<td>C2</td>
<td>The philosophy of change, innovation and co-operation within the institution, especially with regard to technology-enhanced learning, is stated.</td>
<td>Doc</td>
<td>(If available) A documented innovation and implementation plan that explains the major steps for future development.</td>
<td>A comprehensible and future-oriented reflection that is consistent with the programme’s strategic objectives and the existing financial resources.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA</td>
<td>Reflections on how the programme’s acceptance is promoted within the organisation, how resistance is dealt with and how momentum for the programme’s continuous advancement is fostered.</td>
<td>A comprehensive, self-critical and convincing reflection on the encountered and expected challenges.</td>
</tr>
<tr>
<td>#</td>
<td>Quality criteria</td>
<td>Method of</td>
<td>Performance indicators</td>
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<td>AT (AV)</td>
<td>Commitment from the staff indicating that the programme’s objectives concerning teaching and learning is represented within the institution’s culture.</td>
<td>A strong commitment and examples of the faculty and staff co-operating and learning from each other.</td>
</tr>
<tr>
<td>C3</td>
<td>Consideration has been given to issues of workload, compensation, ownership of intellectual property resulting from the programme and their impact on the staff’s commitment and participation.</td>
<td>SA</td>
<td>Incentives for the staff involved in the design and running of the courses are linked to innovative practices, commitment and performance in advancing the programme.</td>
<td>Programme executives comprehensibly demonstrate the impact of incentives on innovative practices, commitment and advancements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AT (AV)</td>
<td>Faculty satisfaction with the current situation and the conditions under which they teach.</td>
<td>High level of faculty satisfaction.</td>
</tr>
<tr>
<td>C4</td>
<td>Commitment of the institution’s leading management to support the programme’s objectives and implementation, especially with regard to the technology-enhanced learning components within it.</td>
<td>AT (AV)</td>
<td>The leading management’s visible and operative support for the programme, such as guest lectures, management attention, internal marketing, standing of the programme.</td>
<td>Comprehensible and strongly convincing commitment of the leading management.</td>
</tr>
</tbody>
</table>
3 References


American Federation of Teachers (2000). *Distance Education: Guidelines for Good Practice*. Adresse:  


Arbaugh, J. B. (2001). *How Instructor Immediacy Behaviors Affect Student Satisfaction and Learning in Web-Based Courses*. Adresse:  


ASTD & Masie Center (2001). *E-Learning: If we build it will they come?* Adresse:  


Austin, I. O. B. (2001). *Capacity Management for Continuous Improvement in Distance Education*. Adresse:  
http://www.col.org/resources/publications/SmallStates00/2_conf_proc_Austin.pdf (Stand: 01.09.2004).

holdern. In K. Wilbers (Hrsg.), *Stakeholdermanagement, Management von E-


Levy, S. (2003). Six Factors to Consider when Planning Online Distance Learning Programs in Higher Education. Distance Learning Administration, VII(II).


Parnell, J. A. & Carraher, S. (2003). The Management Education by Internet Readiness (Mebir) Scale: Developing a Scale to Assess Personal Readiness for Internet-Mediated


Wilson, C. (2001). Faculty Attitudes about Distance Learning: A study of distance learning in Kentucky’s higher education system revealed faculty willing to use the technology but needing more institutional support. *Educause Quarterly, 2*, 70–71.


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