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QUALITY MANAGEMENT FOR PEER PRODUCTION ON E-LEARNING

Work Package	3: Benchmarking Peer Production
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1. QMPP: BACKGROUND AND CHALLENGE[1]

Peer production of e-learning content is a growing trend, which will play an elementary role in creating, validating, enriching, editing, and updating of digital learning content. The concept follows the contemporary trend to allow and enable ordinary users to enter the nucleus of digital content production.

Already today a variety of important factors of success in peer production and collaborative work are established and the peer production mechanism has been a central element in the development of Linux software, the Wikipedia movement and various other shared team work results and learner-created reports. Although peer production has been recognized as an important factor in e-learning content creation, especially with regards to new Web 2.0 tools (such as Wikipedia, Slideshare, Slashdot.org and social bookmarking etc.), the conceptualization how to manage and organize peer production has not been widely discussed.

However, the benefits of peer-produced content are obvious. The lead times for the provision of learning materials shorten, the costs can be remarkably lower and the acceptance of the learners can increase due to the fact that peer-produced e-learning content (based on professional experience) can be more accurate and attracting than “clinically produced” learning content and more coherent regarding the needs and contexts of individual learners or specific learner groups. So the key paradigm shift of transforming passive receivers of e-learning content into active producers of content within their specific areas of knowledge leads to a participation in the creation of learning content that also serves as an important motivational factor for elaborated learning. Accordingly peer production is not only a novel method to produce e-learning content, but also an approach to empower a wide variety of professionals to the learning content production. Thus it has also an important democratic element in bringing the work-related learning content production to the actual level of users, tutors and learning supporters. Consequently the importance of peer production of e-learning content is expected to grow especially in the sector of vocational education and training as well as in professional continuing education. The problem encountered by many organisations however is, that their peer-produced learning material is neither created nor assessed in accordance with a systematic quality approach.

[1] Extracted from EFQUEL and http://www.qmpp.net

Thus the challenge QMPP is facing, is harnessing the knowledge, creativity and wisdom of learners and other key actors in e-learning by a quality approach and various methods of quality assurance. Accordingly the basic understanding is that peer production can be assisted and managed by exploiting the potential of various forms and types of peer production as well as by providing efficient enabling structures and services.

1.1 THE ROLE OF WORK PACKAGE 3 - INTRODUCTION AND OBJECTIVES

The objective of the Work Package 3 'Benchmarking Peer Production' is to identify key approaches of quality management in peer production of e-Learning content by bench-marking peer production practices and processes in other areas (such as the creation of technical documentation, joint editing efforts etc). The key activities include structured benchmarking of other areas of peer production of digital content and the organisation of three expert panels.

In order to reduce redundancy as far as possible, it seemed appropriate to unify the originally separated two deliverables of work package 3 - the synthesis report on the experts panels and the benchmarking report of peer production of digital content - for obvious reasons: the outcomes of the expert panels form part of the benchmarking report.

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2. METHODOLOGICAL FRAMEWORK

2.1 DEFINITION OF THE SCOPE OF THE PROJECT – WHAT IS PEER PRODUCTION?

Peer production can be defined to include the digital content created, edited, enriched by peers, in other words by people on the "same hierarchical level". The contemporary examples in the Internet of peer produced digital content include e.g. YouTube[2], Facebook[3], blogs, flickr[4], slashdot.org[5] etc.

The various dictionaries define the term "peer" as follows:

- "a person of equal social standing, rank, age, etc."[6]
- "a person of the same rank or standing; a legal equal; a person who is equal to another in abilities, qualifications, etc."[7]

Often with the term "peer" is also linked the term "peer group", which is defined as follows:

- "a social group composed of people of similar age and status"[8]
- "a peer group is a group of approximately the same age, social status, and interests; generally, people are relatively equal in terms of power when they interact with peers"[9].

In the context of involving peers to the educational process, some use also the term "peer-to-peer education". Peer-to-peer is often linked in the technical sense with the "peer-to-peer networks", which describe mainly the technical linking of several computers with another as equals. Some authors claim also that the concept of peer-to-peer networks is increasingly evolving to an expanded usage as the relational dynamic active in distributed networks - not just computer to computer, but human to human. Thus e.g. Yochai Benkler claims that associated with peer production are the concepts of peer governance and peer property in the digital world.[10]

2 see http://www.youtube.com
3 see http://www.facebook.com
4 see http://www.flickr.com
5 see http://slashdot.org
6 see http://www.thefreedictionary.com/peer+ (read 16 July 2008)
7 see Webster's Encyclopedic Unabridged Dictionary of the English Language, Random House 1989
8 see http://www.thefreedictionary.com/peer+group (read 16 July 2008)
9 see http://en.wikipedia.org/wiki/Peer_group (read 16 July 2008)
10 of Benkler, see Benkler, Yochai: The Wealth of Networks. Yale University Press, USA 2006.

For our purposes it is needed to note that peer-to-peer eLearning often refers to such instances, in which the peer learners within an educational or training institution are developing eLearning contents to each other for limited use[11]. However, in this QMPP project our aim is also to utilize the peer produced content also outside of one specific educational setting.

The term of "peer production" in the Internet context has similarities with the term "user-created content". User-created content has no widely accepted single definition (see e.g. OECD's study on User-created content, 2007), but according to the guidelines by the OECD in their study, in this research paper user-created content is defined with three criteria, which are the following:

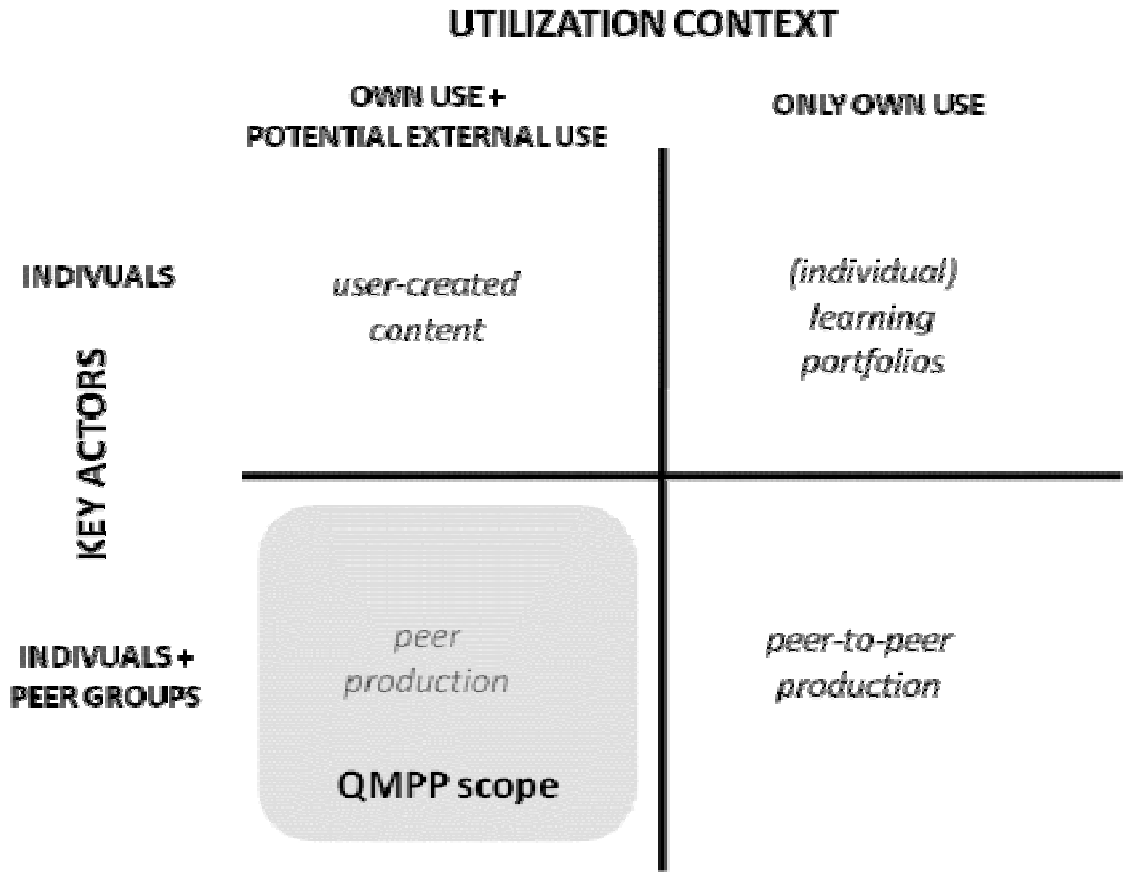
- content is made publicly available over the Internet
- it reflects a "certain amount of creative effort"
- it is "created outside of professional routines and practices".[12]

As a conclusion, in our QMPP project, we want to emphasize the experiences of peer production, which includes also the strong presence of the peer group in the various phases of the learning provision. According to our reading of the literature, the user-created content is mainly describing the digital artefacts produced by various individuals, as in our approach the communicative element is essential – and it takes often place by the strong involvement of the peer group. Thus according to the different terms and their use we can summarize them in the following picture (see *picture 1*).

[11] see e.g. Kotzinos, D. et al.: Online Curriculum on the Semantic Web: The CSD-UoC Portal for Peer-to-Peer E-learning. Proceeding of WWW 2005, May 10-14, 2005, Chiba, Japan.

[12] OECD - Working Party on Information Technology, 2007: Participative Web: User-created content. DSTI/ICCP/IE(2006)7/FINAL. OECD

Picture 1



The group emphasis is also highlighted in the discussion of "informal learning" – e.g. Jay Cross states that informal learning is strongly fueled by the communication of peers and that this communication is the critical element in informal learning.[13]

2.2 QUALITY APPROACHES TO PEER PRODUCTION IN ELEARNING

The quality of eLearning has been discussed and researched in many European projects as well as in many international contexts. Ehlers and Pawlowski describe, in the discussion on quality of eLearning, one can distinguish between three different aspects in the discussion, namely

- different interpretations of quality
- different stakeholders with different perspectives on quality
- different forms of quality (input-quality, process-quality, output-quality).

[13] Cross, J: Informal Learning: Rediscovering the Natural Pathways That Inspire Innovation and Performance. Pfeiffer 2006.

This discussion has also lead to different interpretations of quality – and numerous definitions from various fields are available.[14] As in particular the wide discussion on quality in eLearning in general is well captured by the recent comprehensive book edited by Ehlers and Pawlowski[15], in this context it is not necessary to repeat this discussion, but rather concentrate on the key issues which are altering in the peer production of eLearning.

In the peer production of eLearning the essential feature is that the learners are also acting as creators of the content – in the new learning settings the separation between an "author" and a "consumer" is blurring. In practice, learners are no longer purely consumers but they actively participate in the learning process and thus influence it. As the borders between user and author are blurring, so do the roles of student and teacher.

This fundamental feature is also imposing a different view on quality, as quality is often to be defined and assessed by the same group of actors as the actual creation of the learning content. However, the quality approach to peer production can be more than just an emphasis on self-evaluation and its practices.

Many quality approaches also in eLearning rely on the conventional quality cycle. This quality cycle has included – since the writings of W. Edwards Deming in the 1950s - the steps of PDCA (Plan, Do, Check, Act). This approach has been modified during the last decades in many different ways, and also applied into the area of vocational training. Wirth has presented that in eLearning the essential steps could be:

- - plan
- - do
- - check
- - compare.[16]

As a hypothesis we can claim, that in the development of a quality approach to peer production, the quality approach would mainly address the "process quality" issues – in other words: which processes implemented are assisting the quality of peer produced eLearning content. In addition, in regarding the quality processes, the peer production of the learning materials in their quality assessment can also be linked with benchmarking – or even more precisely, on "benchlearning".

[14] Ehlers, U-D. – Pawlowski, J.: Quality in European e-learning: An introduction. In Ehlers, U-D. – Pawlowski, J. (eds.): Handbook on Quality and Standardisation in E-Learning. Springer 2006.

[15] see Ehlers, U-D. – Pawlowski, J. (eds.): Handbook on Quality and Standardisation in E-Learning. Springer 2006.

[16] Wirth, M.A.: An analysis of international quality management approaches in e-learning: Different paths, similar pursuits. In Ehlers, U-D. & Pawlowski, J. (eds.): Handbook on Quality and Standardisation in E-Learning. Springer 2006.

2.2.1 Quality development of peer production[17]

Ehlers discusses the quality development in what he is referring to as "eLearning 2.0". In describing the phenomenon "eLearning 2.0", he points out that it describes a number of developments, trends and points of view, which require change from teaching to learning. The new point of view essentially connects e-learning with five characteristics:

1. Learning takes places always and everywhere (ubiquitous) and therefore in many different contexts, not only in the classroom.
2. Learners take on the role of organizers.
3. Learning is a life-long process, has many episodes and is not (only) linked to educational institutions.
4. Learning takes place in communities of learning (so called communities of practice. Learners participate in formal, as well as informal communities.
5. Learning is informal and non-formal, takes place at home, at the work place and during leisure time and is no longer centred on teachers or institutions.

In the new environment, learners are highly self-directed, as learning does not only take place in institutions, but everywhere, during the course of one's whole life in a number of different episodes, in learning communities and social networks, using social software and individually compiled contents. Securing and developing quality in such learning scenarios thus has to focus mainly on the individual learning processes and the shown achievements (performance). The learner's perspective is more important than the organizational processes and / or the co called input factors. Quality assessment does not take place by using classical methods of expert- and standard based quality management, quality assurance or control, but by making use of more participative methods and responsive designs. The aim of the process is to reach an individualized assessment, which relates to the learning process.

Initially it seems paradox to talk about the quality of eLearning 2.0, as quality is often linked with checking by externally imposed standards. However, quality can also be understood in a development-oriented way, which means the enabling of learners to develop themselves in their own learning processes and consequently reach better results as far as quality is concerned. In this view, methods of self-evaluation, reflection and peer-evaluation are seen as more important. This kind of quality methodology does not have anything to do with normative, universally valid, but aims at improving the quality of the learning process.

[17] this chapter is based largely on the writings of Ulf-Daniel Ehlers and his article "Web 2.0 – eLearning 2.0 Quality 2.0 – Perspectives on a change in learning culture and quality concepts" (manuscript 2008)

In eLearning 2.0 learning approach, the learner has an important role as active constructor of learning materials (co-creator), personal learning environments and initiator of his or her own learning processes. Interestingly, this is a characteristic, which is often felt to be a barrier for integrating eLearning 2.0 into formal educational processes. This is because the competition of learners and teachers and/or other institutional actors during quality assessment seems to be insurmountable and only resolvable through a loss of power for the institution.

2.2.2 Conditions for quality of peer production[18]

As a point of departure, eLearning 2.0 does not require a new mode of thinking or method of quality development, such as a new and completely altered philosophy of quality – no "educational quality 2.0" is needed. However, changed basic conditions and contexts need to be taken into account. Doing justice to these different contexts, different questions need to be posed when dealing with quality development, different objects evaluated, different criteria of quality applied and specific methods of quality assurance, enhancement and development used. In short: the role of quality development is changing.

While in traditional learning scenarios it mostly means the checking and controlling of quality, in eLearning 2.0 it is becoming more the role of an enabler of learning progress. Learning methods and quality development are moving closer together. Methods such as feedback, reflection and recommendation mechanisms are becoming more important. Typical basic conditions, which need to be taken into account in quality development for eLearning 2.0 scenarios, are explained in the following:

- From reception to participation: the metaphor used for learning is changing. In eLearning
  2.0, quality cannot be tied to the evaluation of a pre-determined learning environment or learning contents produced by an expert. Not the reception but the active participation is most important, that means the question in how far a learning scenario stimulates the creation of individual personal learning environments, the compilation of individual learning contents and sharing them with others.

[18] this chapter is based largely on the writings of Ulf-Daniel Ehlers and his article "Web 2.0 – eLearning 2.0 Quality 2.0 – Perspectives on a change in learning culture and quality concepts" (manuscript 2008)

- From inspection to reflection: quality development for eLearning 2.0 shifts the focus from conformity to a reflection of the learning process. Learners are supported in reflecting, recognizing and putting into effect their own learning progress, educational strategies, needs, etc. and in the course of their actions critically reflect the contribution of educational media. The aim is to achieve a personally ideal configuration of educational media and strategies, which is continuously developed through autonomous reflection.
- From product orientation through process orientation to performance and competence orientation: the material that is used for learning and the processes of its supplier are not the focus of quality development. Quality development focuses on the learners' performance, their individually developed learning products, steps in development and similar aspects (for example in e-portfolios), which shape their way to decision-making and responsibility.
- From planning education for the leaner to planning education by the learner: quality of learning scenarios is often attempted to be achieved through careful analysis of the need for education, a comprehensive conception phase, feedback as far as the design of learning material and development processes are concerned and the evaluation of learning processes. In eLearning 2.0, many of these processes shift from the supplier of a program to the learner. Quality concepts must therefore support the learners in their ability to develop quality through reflection, enable learner-oriented forms of evaluation and offer the necessary tools for quality development to the learners in their PLEs.
- From receiver to developer of learning materials: quality assessment in eLearning 2.0 scenarios does not follow the logic of a marketing effectiveness research to find out how the materials and characteristics of media optimally affect the learning process. It is not about learning process taking part in a unified learning scenario. Rather, the focus lies on processes of development, flexible usage and the validation of social communication processes with other learners.
- From the "learning island" LMS to the internet as a learning environment: eLearning 2.0 approach understand Learning Management Systems (LMS) as a mere starting point, as a signpost for their own search and use of material from the internet, their development and linking to other tools which can be flexibly arranged to become personal learning portals. Quality assessment then does not focus on materials from the LMS anymore but rather on the learning products and perhaps on the learning processes documented in an e-portfolio.
- From tests to performance: learning progress and achievements become visible not only in tests but rather in the learning process documented in portfolios (for example in wikis or web logs), learning products and social interactions.

2.2.3 Key concepts for the implementation of quality in peer production[19]

Quality assessment of eLearning 2.0 focuses on the learning process. There is no use of external standards and inter-individual comparisons (such as tests or assessments). Rather, methods of self-evaluation, intra-individual development processes are employed for this purpose, which are not made via tests but via reflection and evaluation of learning products and e-portfolios. Even though eLearning 2.0 is a new development as a trend, substantial experiences have already been made with the learning models of autonomous learning and learning in communities, which are the basis for it, as well as with methods for quality assessment of learning processes.

In particular, three concepts are worth discussing in more detail, namely self-evaluation, e-portfolios, and social recommendation by peers.

The concept of self-evaluation includes enormous potential for quality assessment of learning processes in eLearning 2.0. The aim of it is not a complete (summative) assessment of learning achievement, but rather an improvement of learning abilities. In scientific literature, positive effects of self-evaluating processes on the learning achievements can be found. When undertaking these processes, students can gain insights into the profile of their own strengths and weaknesses. It has also been shown, that if students evaluate their own achievements positively, they aim for more challenging objectives, engage in their own learning process more and mobilize more personal resources.

Web-based portfolios (e-portfolios) integrate different media and services. Learners collect desired learning products in their e-portfolio, which are made in the course of a class or even during the whole course of their studies. Students can use electronic portfolio to show competences and reflect their learning processes. Learning results, connected with remarks by tutors, teachers and peers, feedbacks and personal reflections are collected. E-portfolios lend themselves also to quality assessment. Learning scenarios supported by e-portfolios emphasize the learning process and enable a deeper understanding of learning processes by all participants.

In eLearning 2.0 communication, feedback and the exchange within a learning communities is essential. With the help of social software tools collaborations can be conducted and information exchanged, as well as evaluated mutually. Three methods are of special significance and first experiences have been made:

- social recommendation mechanisms
- peer review method

[19] this chapter is based largely on the writings of Ulf-Daniel Ehlers and his article “Web 2.0 – eLearning 2.0
Quality 2.0 – Perspectives on a change in learning culture and quality concepts” (manuscript 2008)

- peer assist method.

Social recommendation mechanisms are defined as those methods that serve the purpose of assessing the "true quality" of learning material, in contrast to methods focused on experts. According to this method, the members of a learning community evaluate materials available online. On the one hand this method can be understood as "quality evaluation" in the course of which each learning material is assessed by learners. On the other hand it is also possible to give learners recommendations – á la Amazon – on which learning material is thought to be especially useful, so called social recommendations.

Peer review is a concept that has been introduced a number of times, especially in the academic sector. It deals with assessing quality by peers – that is colleagues or other learners – giving each other feedback. In the area of learning, especially in eLearning 2.0 settings, the peer review can be used to attain feedback and quality assurance for results, learning progress and aims, which is given from other learners or members of the learning community. Peer reflection is a process aimed at creating situations for reflecting, in which the peers are asked to encourage the reflection of learning processes by means of their own experiences.

One possibility to check on the quality of learning processes is learning from other people's solution, respectively entering a peer learning process with others. One model that has recently been gaining more importance is the peer assist model. It is a structured reflection in the context of a social network, which is carried out via social software. This method is clearly distinct from peer review, as its primary aim is to simulate learning processes. By employing the method for eLearning 2.0 scenarios, social assets are used for further developing one's own solutions or for resolving learning difficulties, which come up in the learning process. Structured reflection of a learning process is possibly by broaching the issue of the learning processes, the results and documented outcomes in the peer assist process.

2.3 THE HYPOTHESIS FOR THE QMPP QUALITY MODEL

This chapter discusses the hypothesis for the QMPP model – in other words the project's approach how to achieve and ensure quality in peer produced eLearning content. As discussed in the first chapters of this document, the endorsed quality approach to peer production is not seen as a standard, but rather as a quality process including different stages. There are a number of critical aspects to be taken into consideration in these different stages.

The quality management challenge in eLearning content produced by peer production can, however, undermine the merits of this approach and method. The quality work methodology in peer production is at its best dispersed and fragmented. Often it has also been claimed, that the very nature of peer production is its free flow and thus any formal mechanism (including the quality approach) would be drastically against the creativity factor. At the moment there are already a number of useful tools and approaches used (such as tools for peer reviews, tools for creating own wikis, dictionaries etc.) to ensure and improve the quality of peer produced eLearning content. However, it is important to emphasize that peer production requires also enabling and supporting structures and their effective management. The key issue in this project is to develop a holistic approach to peer production, which enables also the effective utilization of this unique method.

The importance of peer production of eLearning content will grow especially in the sector of vocational education and training as well as in professional continuing education. Many organizations face challenges of shortening life-cycle of learning content as well as operational challenges in providing required learning content with short lead times and lower costs. However, it is also understood that the learning content produced by peers (based on professional experience) can be more accurate and attracting than “clinically produced” learning content by external e-learning experts.

Peer production has great potential in the area of vocational education and training. The future workforce in Europe in many professions has not only to access and handle great amounts of information and knowledge, but even more importantly to produce various elements of information by themselves as an integral part of their work. Peer production is not only a novel method to produce eLearning content, but it is also an approach to empower a wide variety of professionals to the learning content production. Thus it has also an important democratic element in bringing the work-related learning content production to the actual level of users, tutors and learning supporters.

The QMPP project aims at contributing to the quality development and quality management of peer production of eLearning content. The essential work in the project is to develop a solid approach on how to support the quality management of peer-produced eLearning content, pilot the approach in three different VET entities, and to produce a joint toolset for the VET providers of quality management of peer-produced e-learning content.

The QMPP project itself does not take a position of the eLearning tools used, but is developing and implementing a systematic process for the quality management of peer-produced e-learning content.

2.3.1 Peer production cycle

Within the QMPP project we have developed a metaphor for the effective management of quality in peer production. It includes two important elements - these are the "peer production cycle" and the "supporting activities".

The "peer production cycle" includes the following phases:

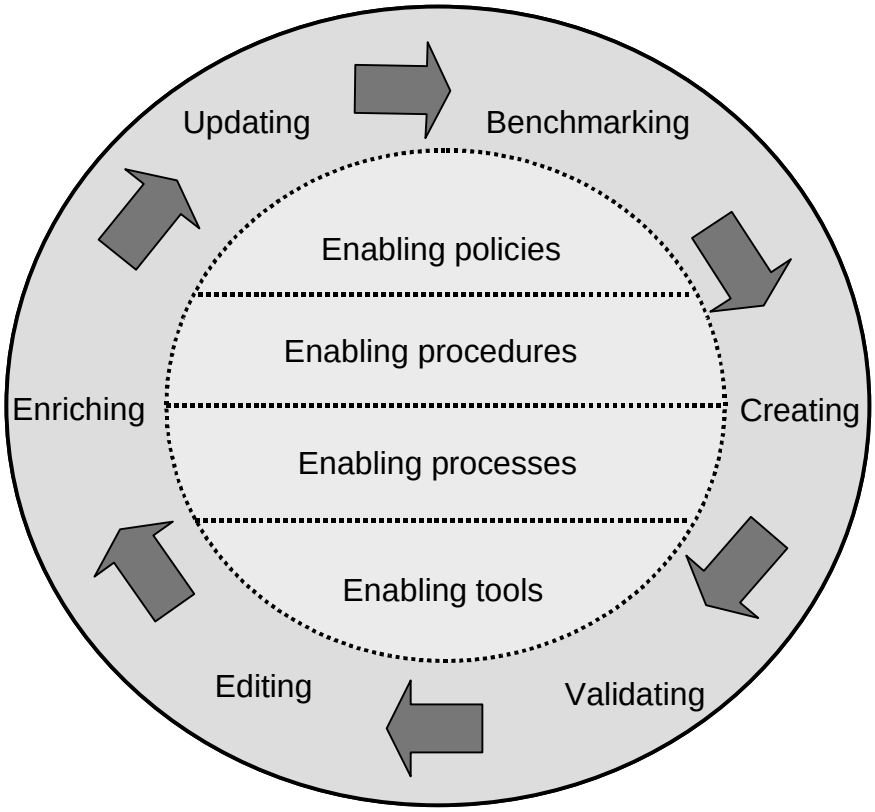
- benchmarking – identifying of good cases and practices, identifying of good digital resources, identifying areas of lacking content, sharing learning experiences by sharing learning (b)logs etc.
- creating – (shared) authoring of texts and other resources; creating images, audio materials, video materials; creating wikis etc.
- validating – validating content with subject matter experts, validating content with peers, rating the validity of the content etc.
- editing – sharing editing responsibilities (from proof-reading to translation), undertaking peer reviews, creating alternative navigational routes etc.
- enriching – creating additional content materials, publishing individual works and team works, sharing or learning (b)logs, adding library links, social bookmarking, creating wikis etc.
- updating – monitoring existing content, updating existing content, adding specific area content etc.

However, as stated previously, it is obvious that organizations favouring peer production must also have enabling and supporting structures. These should include the following:

- enabling policies – organizational opportunities for peer production of content (such as time resources allocated for peer production), management support for peer production, access to various digital resources to be used in content production etc.
- enabling procedures – organizational support for peer production, guidelines for peer production and peer reviews, guidelines of intellectual property rights, agreement on compensation policies etc.
- enabling processes – practical support of peer production, agreed and supported processes and workflows for peer production
- enabling tools – joint and shared tools to be used in peer production to provide effective and fluent collaborative work.

These essential elements are summarized in *picture 3*.

Picture 3



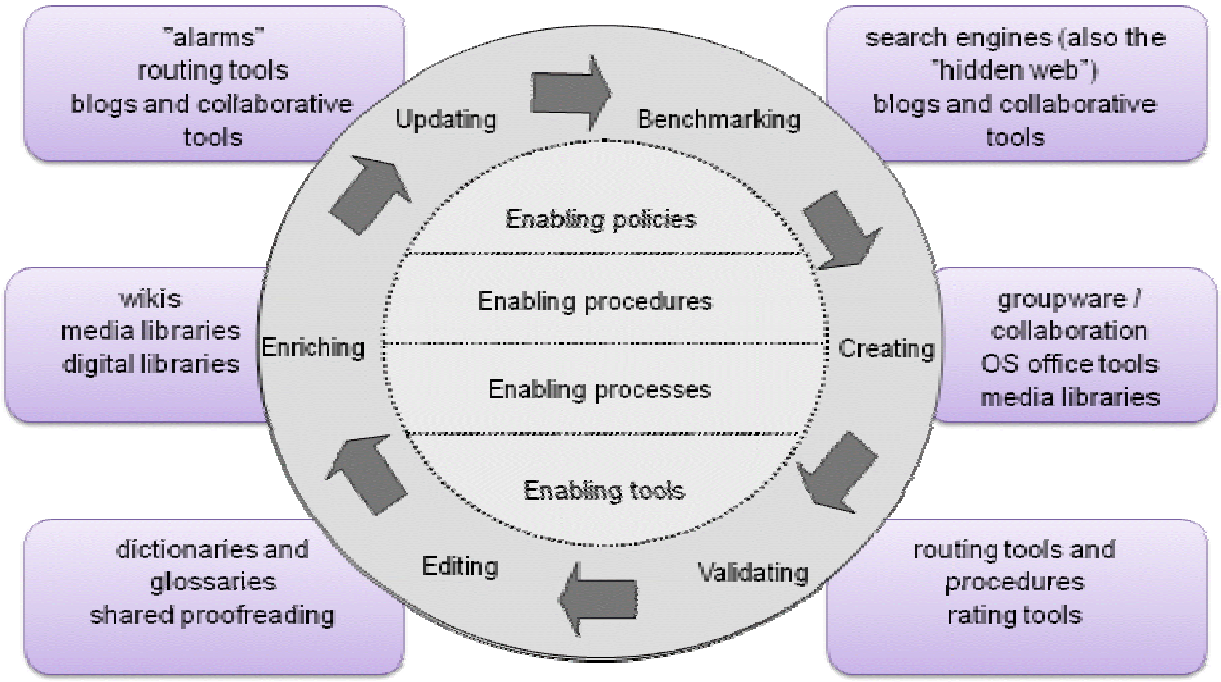
At this stage it should also be emphasized that in real life these stages are not linear or directly sequential. In the creation phase there is naturally authoring, re-authoring etc. – thus it can rather be seen that in each phase there are subphases. Also it is obvious that, for instance, after the validating phase the creation phase is restarted and better content is provided for the validation. It is important to note that in the contemporary Internet environment these phases can be really fast and that the user communities can react really rapidly, if needed.

2.3.2 Existing tools for peer production

It should be noted, however, that in many cases there are already existing good practices (and also open source tools), which have already been tested in various environments. This project is not aiming to develop own tools or toolsets. Rather the challenge is to bring together and integrate the various tools and approaches into a working model and solution, which can easily be utilized within various organizations.

The enclosed *picture 4* visualizes the various phases of the "peer production cycle" and points out some of the already existing practices.

Picture 4



2.3.3 Quality challenges in peer production

The emphasis of the QMPP project is in testing and validating through the pilot the real challenges and opportunities of quality management in peer production of eLearning.

For the design of the experiments in piloting, it is necessary to identify the key issues in different phases. The following table (see *table* 2) summarizes the quality management challenges in each phase.

Table 1

Peer production phase	***Key concerns and key questions***	***Existing approaches and tools***
Benchmarking	▪ What content do we need for our learning activities? ▪ Is the required content already existing in a usable and available form? ▪ Can we access and use the content? ▪ Can we edit and enrich the content? ▪ Which obligations do we have with the existing content? ▪ How can we be sure of its quality? ▪ Are there (peer) references of the content?	▪ Search engines of the Internet ▪ Search engines of the "hidden web" ▪ Blogs ▪ Social bookmarking ▪ Various user groups
Creation	▪ What content do we want to create? ▪ What kind of a guiding structure for the content do we provide? ▪ What type of support do we provide for the creators? ▪ What is the division of labour between the different actors? ▪ How do we create the content? ▪ What routing of the work do we use? ▪ What is the timeframe of the content creation? ▪ How do we ensure the quality of the created content? ▪ Who can create content (open access vs. qualified peers)? ▪ How do we make sure that no third party IPRs are violated? ▪ How do we ensure the IPR	▪ (Open source) word processing and office tools ▪ Groupware tools ▪ (Open source) visualization tools ▪ Tools for podcasts, video casts etc. ▪ Media libraries ▪ Wikis and other structured environments

Peer production phase	***Key concerns and key questions***	***Existing approaches and tools***
	issues? ▪ How do we ensure the media richness and attractiveness of the content? ▪ Which media will we use in presentation and how do we ensure the required media balance?	
Validation	▪ Who should validate the content? ▪ Which mechanisms are we using in the validation (e.g. expert review vs. peer review)? ▪ How do we ensure the feedback of the validation to the creators? ▪ How do we support the validation work? ▪ What is the timeframe for validation?	▪ Routing tools ▪ Rating tools (e.g. giving "stars" to the content) ▪ Groupware tools ▪ Direct editing to the wikis
Editing	▪ What kind of editing are we promoting? ▪ Who is entitled to edit the content (experts vs. all)? ▪ How do we share responsibilities of the editing work (e.g. voluntary division-of-labour vs. free access)? ▪ How do we support the validation work? ▪ Is the versioning a part of editing (e.g. making language versions)? ▪ How is the editing work validated?	▪ Dictionaries and glossaries (to support e.g. proof-reading) ▪ Groupware tools ▪ Direct editing to the wikis
Enriching	▪ What kind of enriching are we promoting? ▪ How do we enrich the existing content? ▪ Who is entitled to enrich the content (experts vs. all)?	▪ Wikis ▪ Social bookmarking and shared bookmarks ▪ Digital libraries ▪

Peer production phase	***Key concerns and key questions***	***Existing approaches and tools***
	▪ How do we support the enriching work? ▪ How is the enriching work validated? ▪ Which media can be used in enrichment (e.g. podcasts, video casts etc.)?	
Updating	▪ How do we make sure that our content is up-to-date? ▪ How do we organize updating? ▪ Who is responsible for updating? ▪ What kind of updating are we promoting? ▪ Who is entitled to update the content (experts vs. all)? ▪ How is updating validated?	▪ Routing tools ▪ Alarms (e.g. based on calendars) ▪ Blogs ▪ Groupware

As one can understand, this table is not complete, but it serves as a working metaphor for the pilots to start the planning of their work and their key issues.

However, it should also be emphasized that the "inner circle" is also important in the quality management of peer production. Thus the issues of the organizational support are essential in making "quality happen". The enclosed table (see *table 3*) summarizes some of the key issues in the enabling and supporting structures of peer production.

Table 2

Enabling and supporting structures	***Key concerns and key questions***
Enabling policies	▪ How do we organizationally support peer production? ▪ How do we allocate time to peer production? ▪ How do we provide access to all needed resources, including digital resources? ▪ How do we compensate/award peer production?

Enabling and supporting structures	***Key concerns and key questions***
	▪ How do we ensure the appropriate approach to the IPR issues?
Enabling procedures	▪ How do we organize the support to peer production? ▪ What guidelines do we provide for peer production in its various phases? ▪ How do we ensure required resources to support peer production (e.g. validators of content)?
Enabling processes	▪ How do we communicate of the options of peer production? ▪ How do we support the workflows in peer production?
Enabling tools	▪ What tools do we provide for peer production? ▪ Which tools do we actively support?

The challenge of quality management in peer production is interesting. As peer production as a mechanism also to produce eLearning materials and content will grow fast, the appropriate quality mechanism can also ensure that peer-produced eLearning materials and contents will reach wider audiences.

3. THE QMPP BENCHMARKING PROCESS

For the realisation of the expert panels, the project partners elaborated an outline with a relatively fixed structure and research questions. This procedure was adopted in order to guarantee a certain comparability of the results and should help the partners to organise the expert panels.
The outline comprised of the following parts:

A) Short Introduction to QMPP
- ◊ Rationale, objectives, envisaged outcomes
- ◊ Web 2.0 Technologies e.g. blogs, wikis, podcasts, social bookmarking, personal learning environments, e-portfolios
- ◊ Peer production
- ◊ Quality assessment
- ◊ Initial and Continuous Vocational Education and Training (I-VET, C-VET), Continuous Professional Development (CPD), skills, competences
- ◊ Introductory questions:
  a) Is quality in peer production processes with Web 2.0 applications manageable?
  b) Is quality manageable with traditional approaches (e.g. ISO, EFQM)?
  c) Is there a generic process model of peer production?

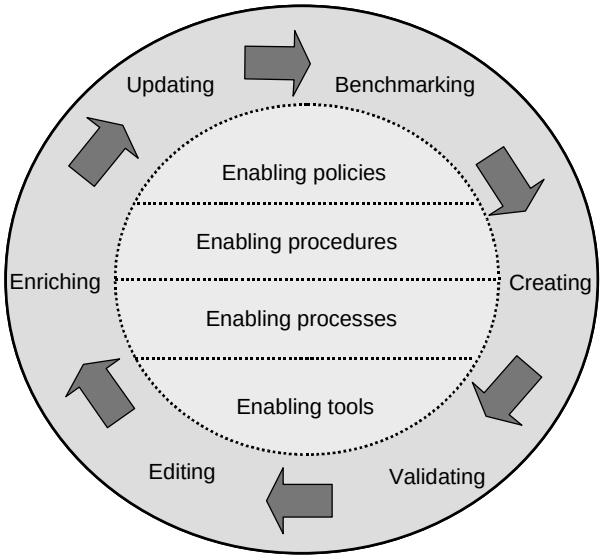
B) Presentation of 3 QMPP Practice Cases
Short presentation of 3 QMPP practice cases e.g. IAVANTE, www.azubi.net, Finish Elevator Company (optional)

C) Learning Café I: Case Assessment & Suggestions for Improvement
Three Speed Cafés on the three best ways to develop / to improve the quality of peer production in the 3 QMPP practice cases.

D) Presentation of Changes from Web 1.0 / E-Learning 1.0 → Web 2.0 / E-Learning 2.0

E-Learning 1.0	***E-Learning 2.0***
Quality assessed through experts	Quality assessed through learners and peers
Learning platform	Personal Learning Environment
Content	User Created Content
Curricula	Learning diaries/e-portfolios
Course structure	Communication
Tutor availability	Interaction
Multimedia (Interactivity)	Social networks / Communities of Practice (CoP)
Acquisition processes	Participation processes

E) Presentation of the Process Model of Peer Production



- **Creating**
  –(shared) authoring of courses, texts, resources, wikis; creating images, audio materials, video materials etc.
- **Validating**
  –validating content with subject matter experts, validating content with peers, rating the content etc.
- **Editing**
  –shared editing, undertaking peer reviews, creating alternative navigational routes etc.
- **Enriching**
  –creating additional content materials, wikis, publishing individual works and team works, sharing or learning (b)logs, social bookmarking etc.
- **Updating**
  –monitoring existing content, updating existing content, adding specific area content etc.
- **Benchmarking**
  –identifying of good cases and practices, identifying of good digital resources, sharing learning experiences by sharing learning (b)logs etc.

F) Presentation of the Peer Production Quality Matrix & related Research Questions

❶ What is the **object** of the quality assessment? Learning process Work/business process Degree of communication/participation Learning achievement/outcomes Learning object, course content, resource etc.	❷ What are the **dimensions** of the quality assessment? Pedagogical Technological Economical Institutional Organisational Cultural etc.
❸ What are **methods** and **instruments** to assess/develop quality? Self assessment External assessment Peer review Collaborative dialogue etc.	❹ What are the **stakeholders** of the quality assessment? Users Experts etc.

G) Learning Café II: Benchmarking the Quality Assessment in Peer Production Processes with Web 2.0 Applications
Four Learning Cafés on how to benchmark the quality assessment of peer production processes with Web 2.0 applications by relating the Peer Production Quality Matrix with the Process Model of Peer Production

H) Rapport from the Learning Cafés & Final Plenary Discussion

4. SYNTHESIS OF THE EXPERT PANELS

Structure of this chapter

This chapter is structured into four sub-chapters:

1. The first part discloses the structure, setting and setup of the expert panels under examination.
2. The second chapter outlines the applied methodology of analysis for this synopsis.
3. The third part presents the results of the panels based on the methodology explained within the third chapter.
4. The fourth chapter provides some conclusions derived from the panels and all previous parts of this paper.

Purpose

The objective of this paper is to subsume the results and outline the most significant conclusions of the three independently conducted expert panels on management of peer production of e-learning in three European countries i.e. Italy, Spain and Austria.

Context

The expert panels were conducted as part of work package no. 3 'Benchmarking Peer Production' which is an integral component of the QMPP project (Quality Management of Peer Production). It aims to accelerate the creation of peer-produced e-learning content by providing a methodology to manage its quality.[20]

[20] Extracted from http://www.qmpp.net

4.1 THE EXPERT PANELS

The general objective of the expert panels was to explore the experiences in peer production mechanism, processes and practices and to collect distinct views and applied approaches for peer production of (digital) content for the purpose of integrating the results into the design and validation of the QMPP quality approach and tools.[21]

In this context the focus was on the examination of following questions:[22]

1. What is the object of the quality assessment in peer production and learning 2.0 approaches?
2. What are the dimensions of the quality assessment in peer production and learning 2.0 approaches?
3. What are methods and instruments to assess/develop quality in peer production and learning 2.0 approaches?
4. What are the stakeholders of the quality assessment in peer production and learning 2.0 approaches?
5. How is the perception of the QMPP Process approach and QMPP Quality Matrix in regards to...
   a. Usefulness
   b. Usability
   c. User-friendliness
   d. Comprehensiveness
   e. Comprehensibility
   f. Appropriateness (for different target groups)
   g. Recommendations (for necessary improvements)
   h. Additional comments

The panels were conducted within the period of June to September 2008.

[21] As developed within Work Package 2 and 3

[22] within the Italian expert panel the results were not included into the provided results template but based and structured on the basis of a provided questionnaire that included the following questions: (1) Definition of key characteristics of a peer, (2) Definition of meaning of "Peer Group/Community", (3) Definition of meaning of peer production, (4) Experiences extracted from peer production developed within the expert's institution, (5) Products and artefacts created by peers of peer production developed within the expert's institution, (6) Perception of the QMPP Process approach for peer production considering (a) the QMPP Peer Production Quality Matrix, (b) the statement that the evaluator of the quality of a peer produced output is/should be a co-designer of the output (c) strategies and processes for enhancing peer production and (d) the risk of including quality principles into a peer production process regarding the potential for creativity and innovation.

4.1.1 Participants

The participants of the panels were professionals to learning content production from various organisations from the educational field and corporate context such as (for Italy:) Politecnico Milano, Università Roma Tor Vergata, CNR Genova, Amicucci Formazione, Ufficio Studi Microsoft, CIDI Milano, ISFOL; (for Spain:) Universidad de Granada, Fundación I+D del Software Libre, Consorcio Fernando de los Ríos, Grupo TADEL / ESEA, IAVANTE, Intecna Soluciones, CEVUG; and (for Austria:) AMS Oberösterreich, amsbg, Check point eLearning, Dicole Oy, Eötvös Loránd University, Free Universtity of Bolzano, Hacettepe University, HCI Productions Oy, HTL-TGM Wien 20, ICT&S Center, Intel GmbH, Meditrainment, Pädagogische Hochschule Rorschach, Primas Consulting, Research Studios Austria Forschungsgesellschaft mbH, Scienter Soc., Universität Innsbruck, Universität Innsbruck, University of Salzburg, and University of Duisburg-Essen, IAVANTE, Institute for Innovation in Learning [FIM-NewLearning][23]

Concluding the overall attendance from scientific/educational and corporate contexts was relatively balanced.

4.1.2 Approach

The expert panels of Spain and Austria were organised as an introductory learning café and a subsequent face-to-face Meeting/Workshop. The Italian panel however was performed via emailed questionnaires and a subsequent telephone interview due to time restrictions of the participants during the summer period. For an introductory purpose the (extractions of) previously developed documents of the QMPP working packages were made available to all participants. Further on a reporting template was provided to support the ascertainment and structure of results.

4.2 METHODOLOGY

4.2.1 Choice of Methodology

Inevitably an appropriate and reasonable choice of a method of analysis had to be made with regards to the design and constitution of the panels and their results. Since the panels were built for the purpose of providing contextualization, interpretation and understanding of the actors' perspectives and given the fact that the examined questions and variables are quite complex, strongly interrelated and difficult to measure and the results consist of rich, descriptive information rather than statistical data, a qualitative analysis approach is an obvious decision.

[23] Please see the appendix for a complete list of contributors, editors, authors and organisations

In accordance with the QMPP Group a qualitative content analysis (focused on the summarization) of the result protocols was selected as the methodology of analysis.

4.2.2 Qualitative Content Analysis

The basic idea of a recapitulatory systematic content analysis is to unify and incrementally increase the generality of the source material.

According to P. Mayring, this approach is predominantly driven by six reductive processes:[24]

1. Elimination
   (Disregarding propositions)
2. Generalization
   (Substitution of propositions through higher-level propositions)
3. Construction
   (Construction of one key proposition based multiple single propositions)
4. Integration
   (Ignoring propositions already integrated in a constructed proposition)
5. Selection
   (Maintaining of selected central propositions)
6. Grouping
   (Display of several content-wise connected propositions as one)

[24] According to Mayring (2000, p.14)

For this purpose Mayring offers the following model for the "preparation process" of recapitulatory qualitative content analysis of protocol documents:

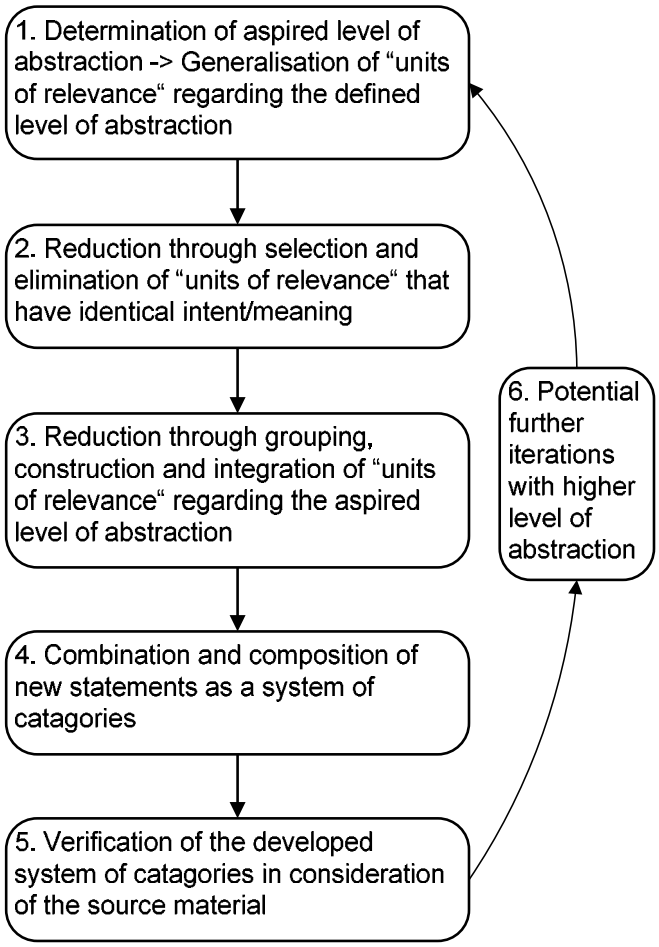


Figure 1: Model for the "preparation process" of recapitulatory qualitative content analysis of protocol documents[25]

[25] On basis of Mayring (2000, p.14)

Further on Mayring provides a plan of procedures for the "process of analysis" of qualitative content focused on the summarization of protocol documents:

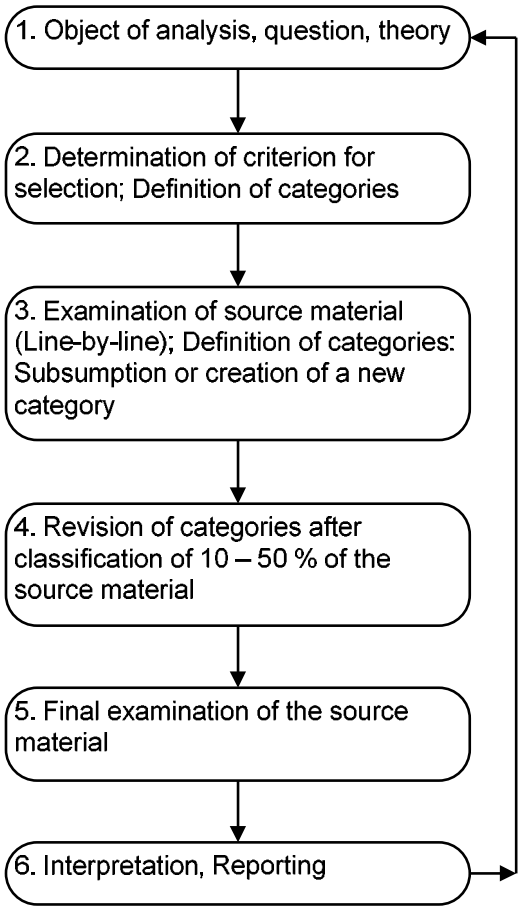


Figure 2: Plan of procedures for qualitative content analysis focused on the summarization of protocol documents[26]

Based on this methodological structure and guidelines the analysis of the results will be accomplished by means of the following working steps.

1. Definition of Problem statement and objects of analysis
2. Determination of criteria and categories
3. Examination of source material
4. Interpretation and Reporting

[26] On basis of Mayring (2000, p.19)

4.3 Analysis and Results

As already briefly described in chapter 4.1 the main objective of analysis is the assessment of the following fundamental questions:

Concepts and Definitions

5. What are the key characteristics of a peer?
6. What is the definition/meaning of a "Peer Group/Community"?
7. What is the definition/meaning of peer production?
8. What experiences can be extracted from peer production developed within the expert's institutions?
9. Which sorts of products/artefacts are created by peers within the expert's institutions?

Quality related Outcomes

1. What is the object of the quality assessment in peer production and learning 2.0 approaches?
2. What are the dimensions of the quality assessment in peer production and learning 2.0 approaches?
3. What are methods and instruments to assess/develop quality in peer production and learning 2.0 approaches?
4. Who are the stakeholders of quality assessment in peer production and learning 2.0 approaches?
5. How is the perception of the QMPP Process Approach and QMPP Quality Matrix in regards to...
   a. Usefulness
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   c. User-friendliness
   d. Comprehensiveness
   e. Comprehensibility
   f. Appropriateness (for different target groups)
   g. Recommendations (for necessary improvements)
   h. Additional comments

Overarching Areas

1. How is the appraisal of the statement that the evaluator of the quality of a peer produced output is/should be a co-designer of the output?
2. What are the strategies and processes for enhancing peer production?
3. How to deal with the risk, that including quality principles into peer production processes could negatively influence the potential for creativity and innovation?

4.3.1 Determination of Criteria and Categories

4.3.1.1 Concepts, Definitions and Overarching Areas of Peer Production

Since the concepts and definitions for peer production as well as the overarching areas are nearly exclusively based on the source material of the Italian expert panel, the results concerning some of these parts will be assigned to the questions and definitions under examination without further classification.

Question No. 3 of concepts and definitions for peer production, “What is the definition/meaning of Peer Production?” will however be divided into a section concerning the “Assessment of the given definition of peer production” and another part regarding the “Characteristics of Peer Production”.

Question No. 4 of concepts and definitions for peer production, “What experiences can be extracted from Peer Production developed within the expert’s institutions?“ is subdivided into a segment regarding the “contexts in which e-learning products are created” and another section concerning the “tools used for the production, development and editing”.

Question No. 5 of concepts and definitions for peer production, “Which sorts of products/artefacts are created by peers within the expert’s institutions?“ is divided into a part concerning the “final products” and a section regarding the “reuse of products”.
The remaining available material of all panels will be assigned to the above mentioned questions and subsumed on basis of the six reductive processes mentioned within the chapter on qualitative content analysis.

4.3.1.2 Quality related Outcomes

1. The examination of objects of quality assessment in peer production and learning 2.0 approaches is subdivided into the categories of:
   a. Statements concerning the definition of peers, their activities, behaviour and the degree of communication/participation
   b. Statements concerning the organisation and process of learning
   c. Statements concerning the structure and quality of content, learning objects, potential achievements/outcomes and the challenge of developing a consensus

2. The examination of dimension of quality assessment in peer production and learning 2.0 approaches will be divided into the categories of:
   a. Dimensions of peer production and quality assessment concerning institutional and organisational issues
   b. Dimensions of peer production and quality assessment regarding the economical, cultural and pedagogical aspects
   c. Dimensions of peer production and quality assessment concerned with content matters
   d. Dimensions of peer production and quality assessment with regards to the technological aspects

3. The examination of methods and instruments of quality assessment in peer production and learning 2.0 approaches is subdivided into the categories referring to:
   a. Methods and instruments of self assessment
   b. Statements regarding peer reviews and external assessment
   c. Methods and instruments for collaborative dialogue

4. The examination of stakeholders of quality assessment in peer production and learning 2.0 approaches will not be divided into categories.

5. The examination of questions 5 “How is the perception of the QMPP Process Approach and QMPP Quality Matrix” will be subdivided into the objects of evaluation.27

The quintessence of the experts’ views on the questions regarding the concepts and definitions and the quality related outcomes will additionally be summarized in simplified illustrations on basis of “cause-and-effect-diagrams” that allow for the identification of flaws, crucial interdependencies and the potential for synergetic effects.

Within the final part of each chapter (concepts and definitions, quality related outcomes and overarching areas) the essence of all gathered information will then be subsumed by and integrated in contemplation of the fundamental questions under examination in order to answer the purpose of providing an overview and recapitulatory report.

[27] The QMPP Process Model and the QMPP Quality Matrix

4.3.2 Analysis of the Qualitative Data

4.3.2.1 Concepts and Definitions for Peer Production

a) What are the key characteristics of a peer?

Concerning the definition of a peer the expert panels developed the following understanding of a peer's characteristics in particular regarding a peer's attitude:
As a part of a community a peer is or should be open-minded, perceptive and aware of his competencies and responsibilities in terms of effort, attention and reaction rate. In this context peers are expected to possess strong relational and auto-critical skills, exhibit good relationship management and a deep subject matter competence in a specific sector of knowledge.

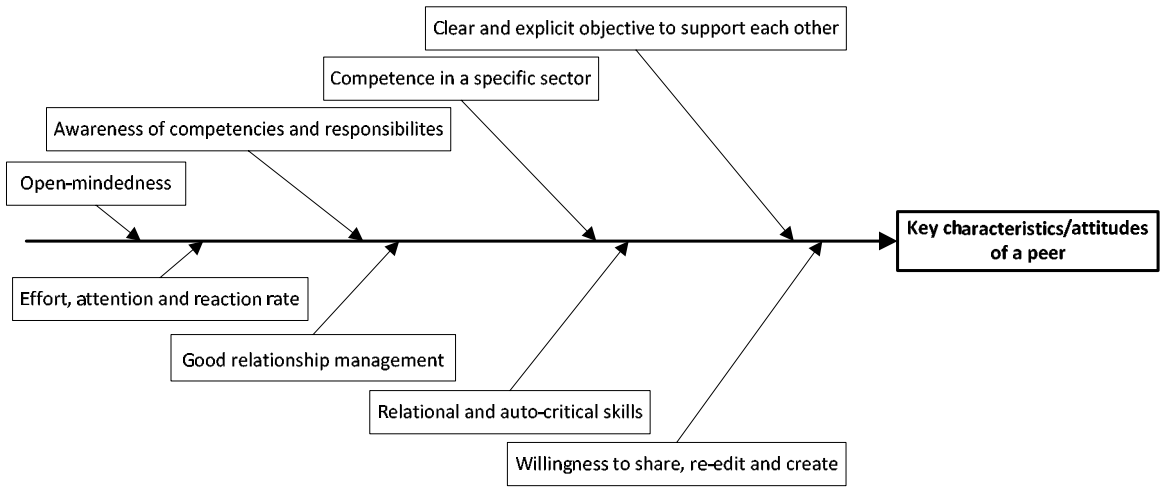


Figure 3: Key characteristics / attitudes of a peer

b) What is the definition / meaning of a "Peer Group / Community"?

A peer group is the group of peers relating to a single person or group. First of all it is agreed on the fact that due to the multitude and diversity of peer groups and communities it is virtually impossible to determine concrete characteristics which hold true for all sorts of peer groups. According to this circumstance the following general characteristics of a peer group were specified in order to determine an abstract definition.

Peer group members are willing to share materials, re-edit existing ones and create knowledge and they have a clear and explicit objective to support each other in order to grow together. Authority within the group is very seldom based on a hierarchy of roles. Rather than that, in most communities a level of members develops naturally and in accordance with the degree of participation, quality of contributions and the confidence acquired from experience and competencies. Furthermore openness and recognizing and exploiting ways of shared communication and operational modalities are considered to be essential for a peer group to prosper. This becomes even more evident in face of the understanding that sharing should not be limited to the exchange of learning products but also explicitly address the sharing of experiences concerning learning processes, paths and projects.

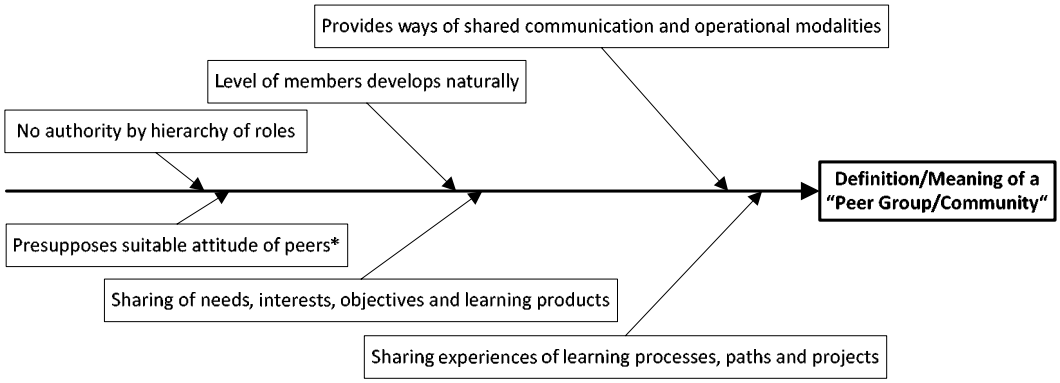


Figure 4: Definition / Meaning of a "Peer Group / Community"

* As defined in the chapter/graphic "Key characteristics of a peer"

c) What is the definition / meaning of Peer Production?

Assessment of the given definition of Peer Production

Given definition of peer production:
"The digital content for learning created, edited, enriched by peers, in other words by people on the same hierarchical level"[28]

The definition is regarded to be adequate for "learners" peer production". For "teachers" peer production" however the limitation to digital content is considered to be inappropriate and too restrictive. Extending the concept to "the structure (project) of educational modules and/or whole courses, or at least to the path proposed to the learner" is therefore highly recommended. The expression "hierarchical level" however is deemed to induce the misleading idea that it only refers to individuals of the same organisation.

[28] Extracted from the Italian questionnaire

Concluding it is perceived to be important to explicitly highlight the fact that collaboration very often occurs cross-organisational and in the corporate sense can even reach across different companies or suppliers.

In addition another field which has been given importance in the expert statements is learning by peer-interaction. These learning approaches can be summarised by means of the term “Learning 2.0” approach. It describes a number of developments, trends and points of view, which require change from teaching to learning. The new point of view essentially connects e-learning with five characteristics:

1. Learning takes places always and everywhere (ubiquitous) and therefore in many different contexts, not only in the classroom.
2. Learners take on the role of organizers.
3. Learning is a life-long process, has many episodes and is not (only) linked to educational institutions.
4. Learning takes place in communities of learning (so called communities of practice: Wenger 1998): Learners participate in formal, as well as informal communities.
5. Learning is informal and non-formal and takes place at home, at the work place and during leisure time and is no longer centred on teachers or institutions.

E-learning 2.0 means using social software and learning services, which can be combined according to individual needs. The word „can“, is very significant in this context as technology alone does never determine its use.

Characteristics of Peer Production

According to the panels the most significant characteristics of peer production are recognizing the value and necessity of complex processes within peer production, such as creation, sharing and editing and the readiness to be open and receptive towards inputs from different individuals, fields and directions. Besides that it is agreed on the fact that sharing the same fields of interest and objectives is a prerequisite.

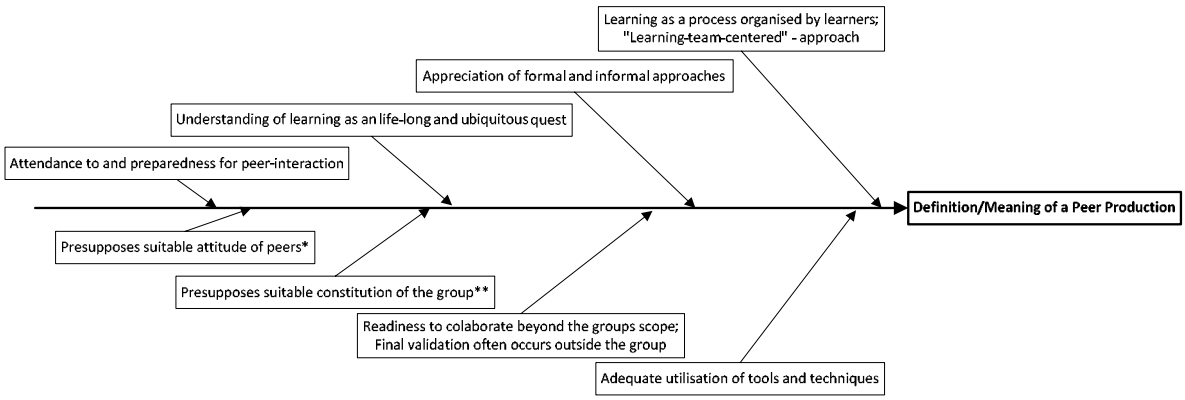


Figure 5: Definition / Meaning of Peer Production

* As defined in the chapter/graphic "Key characteristics of a peer"
** As defined in the chapter/graphic "Definition/Meaning of a "Peer Group/Community"

In conclusion the understanding of peer production builds on the key characteristics/attitudes of a peer and the definition and preconditions of peer groups and communities.

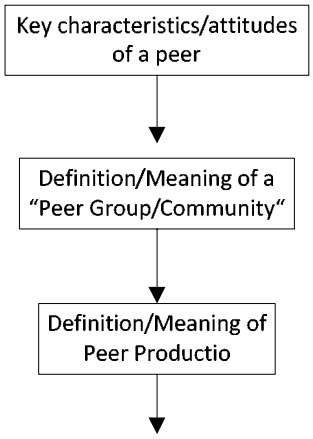


Figure 6: Constitution of the definition of peer production

d) What experiences can be extracted from Peer Production developed within the expert's institutions?

Contexts in which e-learning products are created

The predominant and most common context in which the experts experienced the creation of e-learning products are educational activities such as teachers' training in educational technology, post graduate courses for final projects and collaborative production and sharing of LOs by teachers in school projects[29]. Besides these, some examples of learning content production by students have been experienced, too. In addition to that however new and experimental models in ICT use are also tested within research activities of institutes.

Tools used for the production, development and editing

Since the expert's experiences with most ITD e-learning activities of peers concern the use of networked collaborative learning strategies, the tendency is to utilise digital material that is not necessarily structured and designed according to ODL criteria. Concluding the trend is to collaborate on the design and reuse e-learning based processes rather than designing actual e-learning contents collaboratively.

For this purpose learning content management systems such as Moodle and collaborative platforms such as C.S.C.W are deployed as supporting tools and technologies. Further on web 2.0 applications such as Delicious, Flickr and Youtube, as well as wikis, weblogs and traditional ways of online collaboration such as e-mail/mailing lists and web forums are the most prevailing measures that are yet exploited. Thereunto editors to create Learning Objects such as eXe and Reload and content-enhancing and exercise supporting tools such as HotPotatoes or CMAP for visualising logical maps are known and utilised by the experts, too. Beyond that, classic tools to create and update online content like HTML editors or GoLive and DreamWeaver are made use of in the same manner.

In the case of Microsoft Italy, Learning Essentials 2.0 for Microsoft Office and the THESIS e-learning product suite are deployed increasingly for the production of multimedia contents.

[29] See www.sloopproject.eu and www.tes.mi.it/sir2portale

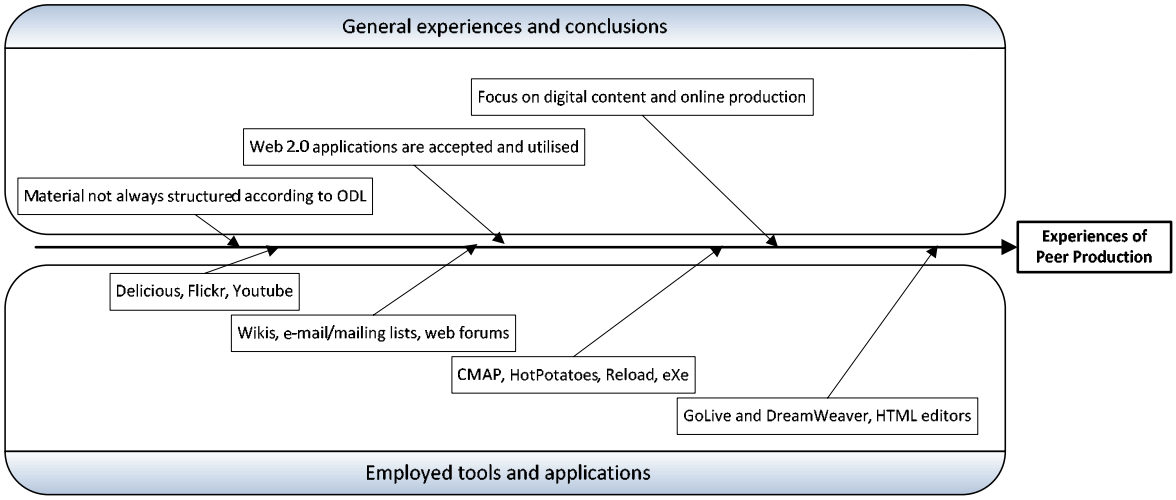


Figure 7: Experiences extracted from Peer Production

e) Which products/artefacts are created by peers within the expert's institutions?

Final products

According to the expert's experience the final products of peer production are learning objects (LOs), storyboards of LOs, articles, reports, course notes, book chapters and other sort of documents. Besides, online artefacts such as wiki pages and tutorials in Flash or MS PowerPoint loom large as well. Further on it is observed that final products such as LOs and tutorials are predominately dealing with subjects whose content is about fields of knowledge that change rather quickly such as topics related to computer and information technologies.

Reuse of products

As far as the reuse of products of peer production is concerned the experts agree that the smaller the learning units the higher the potential for future reuse. Furthermore not only content predominantly produced and reused by students such as course notes can be exchanged via shared repositories and "recycled" and enhanced by teachers to become complementary educational material, but also models like course structures have great prospects for reutilisation.

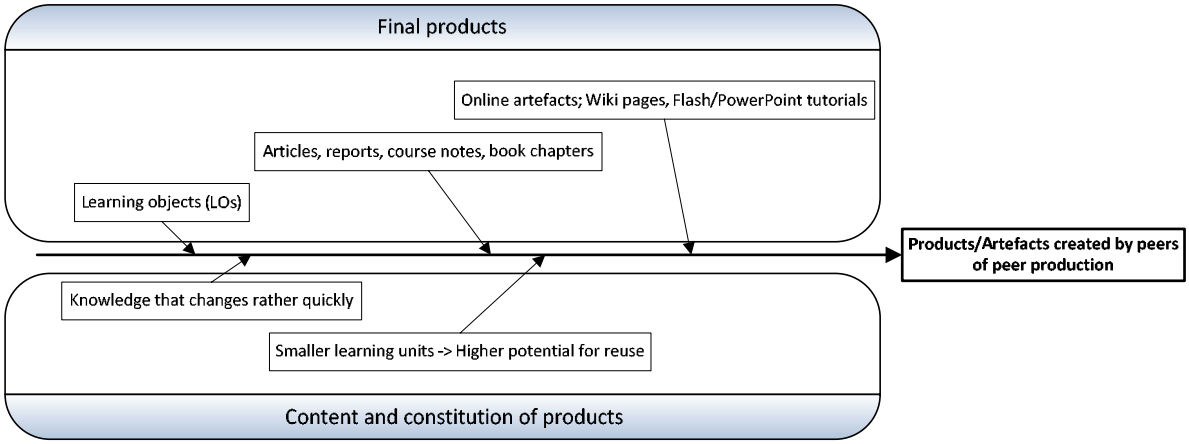


Figure 8: Products / Artefacts are created by peers of peer production

Summary of key points of concepts and definitions for peer production

In order to cope with the entailed requirements of peer production and learning 2.0 environments, in terms of intensified ways and methods of communication, interaction, participation, and (self-) assessment, learners are required to act autonomously, self-directed, and open-minded, while empowering and enabling themselves to enhance and reflect on their own competencies, auto-critical skills, and willingness/readiness to share, contribute and collaborate. In this regard communities of peer production are urged to prepare, set up and adjust their members and the given social, environmental and technological surroundings to the shifting requirements concerning the understanding of shared needs, interests, objectives and products. In accordance with the so far gathered experience, the focus needs to be on creating tools, guidelines and policies that enable and drive peers to produce preferably small, structured and standardized learning objects that are easy to asses and cope with for potential future reuse, and transparent in terms of their process of creation.

4.3.2.2 Quality related Outcomes

A) What is the object of the quality assessment in peer production and learning 2.0 approaches?

a. Statements concerning peers, their activities, their behaviour and the degree of communication/participation

In general the behaviours of peers, such as students and potential students, the community and other producers of the learning material are considered to be more important than knowledge reproduction. In particular the process of communication and social interaction, such as those within social networks are regarded as crucial objects to the process of quality assessment. Therefore the organisation of communication processes demands a high attention.

Statements concerning the organisation and process of learning
The process of learning, communication and interaction is generally regarded to be more significant than reaching pre-defined outcomes of learning.
Regarding the process of learning, the planning and control of activities as well as the consideration of evaluation against coordination and systematization of spontaneous knowledge building by providing an adequate methodology for assessment is considered to be of crucial importance. Furthermore the process of consensus building in respect of awareness, trust, cohesion, participation and criteria to achieve a consensus is deemed to be of very high significance.

b. Statements concerning the structure and quality of learning objects, content, potential achievements/outcomes and consensus building

As far as the results and outcomes of quality assessment are concerned, the standardization and typology of content entities and possibilities to record and tag these is regarded to be central in terms of effectively organising, measuring and filtering knowledge. Besides, the desire to adequately assess the achievement of the proposed objectives, the usefulness and suitability of content and the level of user satisfaction highly demand for the utilisation and development of measuring instruments.

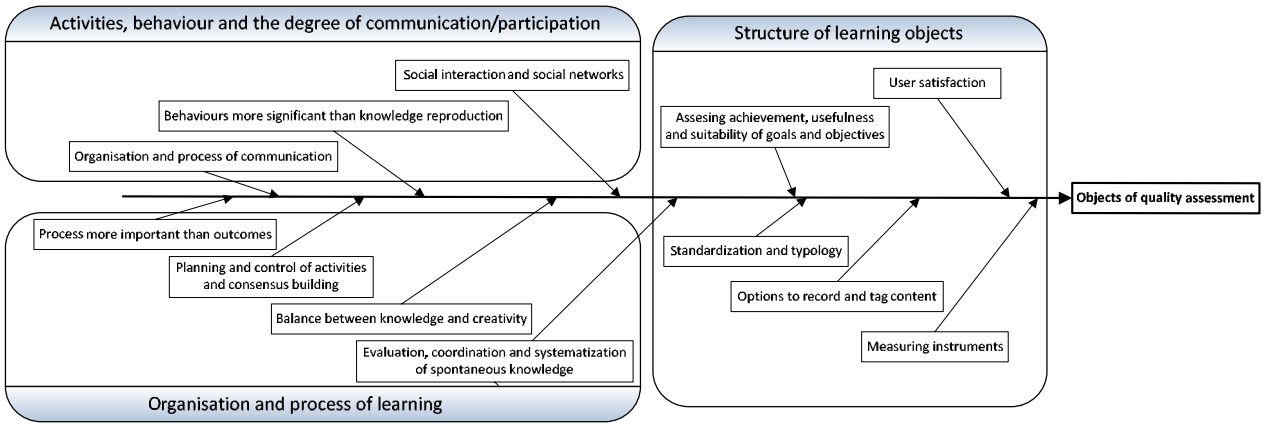


Figure 9: Object of quality assessment in peer production and learning 2.0 approaches

B) What are the dimensions of the quality assessment in peer production and learning 2.0 approaches?

a. Dimensions of peer production and quality assessment concerning institutional and organisational issues

Regarding the dimensions of peer production, the peer group's respectively the final user's adaptation to, and satisfaction with the process and results is considered to be pivotal. Facing this challenge it is essential to heighten the level of motivation and recognition within the group and every individual in it. This includes enabling groups of peer production to foster the personal growth, development and social integration of its individuals and their learning capabilities. Therefore this dimension of peer production relies, to great extends, on the peer groups' work ethic in regards to exploiting, assessing and expanding the social abilities and potentials of each individual within the group.

b. Dimensions of peer production and quality assessment regarding the economical, cultural and pedagogical aspects

Since the social networks are a continuously growing factor for learning and the production and obtainment of knowledge the social system surrounding a group and its peers is regarded as a key dimension of peer production. This leads to the conclusion that the characteristics of peers, the actual area of learning (vocational/ professional/ educational) and the specifications of the environment (open/close), on which it is based upon, have to be taken into account and clearly defined.

c. Dimensions of peer production and quality assessment concerned with content matters

As far as the content of peer production is concerned it is regarded to be of crucial importance that the way the content was created or composed is transparent to the peers within the group. Further on the “up-to-dateness” of content in terms of adequate updating the material within an appropriate refresh period needs to be ensured in order to provide satisfactory results for the group and its users. Likewise the rigor and veracity of content has to be assured at all times.

d. Dimensions of peer production and quality assessment with regards to the technological aspects

Considering the dimensions of peer production the correct and appropriate deployment and combination of tools and instruments is a crucial factor within learning 2.0 approaches. In this regard it is pointed out by the panels’ experts that the peers’ expertise and competence to employ ICTs might often be opposed to their strength concerning the field of knowledge in demand. Further on the above mentioned impact of social networks and the need to exploit these demands peers to be even more capable to cope with ICT.

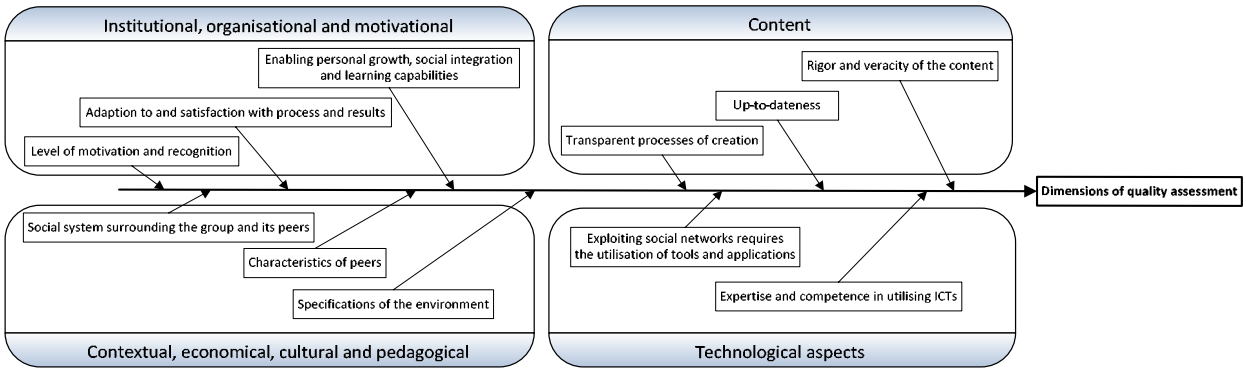


Figure 10: Dimensions of the quality assessment in peer production and learning 2.0 approaches

C) What are methods and instruments to assess / develop quality in peer production and learning 2.0 approaches?

a. Methods and instruments of self assessment

In general it is agreed on the fact that quality development in web 2.0 scenarios demands the empowerment of learners to assess and evaluate their own learning and production. To support this assessment organisations are urged to provide a system and structure of indicators based on tools, guidelines and decision factors in order to help learners to develop a competence in evaluating their own and others' progress and results.

b. Statements regarding peer reviews, external assessment and collaborative dialogue

The need to support learners to assess the quality of learning results by means of software, guidelines and policies of course holds true for the mutual evaluation of learning outcomes, too. But even though it is agreed on the circumstance that in web 2.0 scenarios "crowds" often hold more wisdom than a single expert, and that this wisdom needs to be exploited, the development of a consensus is considered to be the crucial asset. Therefore methods such as polls, surveys and questionnaires are regarded to be essential. As far as the choice of peers for evaluation and examination of material produced by other peers is concerned, spontaneousness, voluntary or random selection as well as the selection of reference groups is regarded to be feasible under certain circumstances.
Facing the fact that stakeholders not only develop but also assess their own material, nevertheless leads to deliberating a periodical evaluation by (external) experts in order to ensure and improve the conclusiveness and correctness of outcomes and processes without falling into traps of common knowledge effects, hidden profiles, group polarisation or other phenomena that have high potential for amplifying errors due to failures of group judgement, information aggregation or consensus building.

c. Challenges and Problems concerning the assessment of quality

The key challenge concerning evaluating learning processes and results within web 2.0 scenarios cannot be assessed from pre-defined standards and measures. This leads to measurements of quality assessment that are understandably not always compatible with institutional guidelines and regulations. Since the quality of peer production naturally depends on the competence and qualification of its peers. Accordingly the assessment of the produced quality, not performed by experts but by the peers themselves, is always afflicted to potentially generate so called "garbage-in – garbage-out" problems.

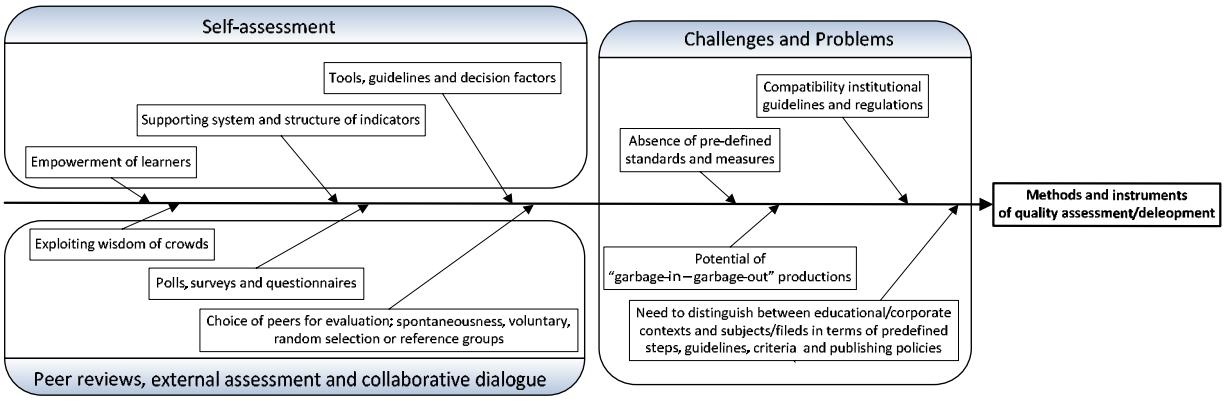


Figure 11: Methods and instruments to assess / develop quality in peer production and learning 2.0 approaches

D) Who are the stakeholders of the quality assessment in peer production and learning 2.0 approaches?

Most experts consider the stakeholders of peer production to be "everybody who is participating in the process of learning, evaluation and content and knowledge creation". This includes all sorts of peers, participants and members of involved communities and organisations such as students, potential students and also external analysts, mentors and experts. Nevertheless the perception, that there is no separation between teachers and learners any longer, because all participants are stakeholders of the same learning environment is not shared by all experts. According to that, some experts perceived a need to distinguish between teachers' and learners' peer production.

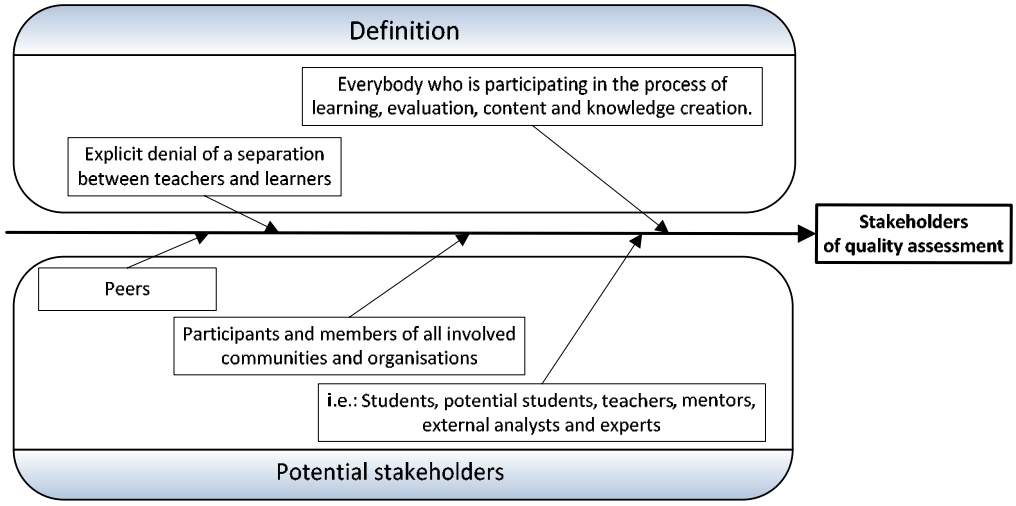


Figure 12: Stakeholders of quality assessment in peer production and learning 2.0 approaches

E) How is the perception of the QMPP Process Model and QMPP Quality Matrix?

QMPP Process Model

In general the QMPP process model is perceived to illustrate a complete process whose steps give an adequate comprehensiveness, cover many aspects and are appropriate for diverse target audiences, such as teachers, researchers, students and other users. Nevertheless the experts noted that users who are not experienced and deeply involved in formal e-learning contexts, might find it difficult to apply the model to real life situations and therefore could need a more guided and argumentative approach in order to understand the process and optimize the implied steps. Concluding the model is expected to fulfil expectations concerning its usability in an experienced and well connected learning community, but needs to be supported by a social networking platform that creates a community environment and provides tools and guidelines to describe its steps and workflows in more detail, and thereby drive the inexperienced authoring, editing and evaluating users. Considering the fact that nowadays the process of learning on basis of peer production, as it is actually happening within environments such as Wikipedia and Facebook, is rather disruptive, unstructured and chaotic, experts think that the model either requires some sort of translation into a non static phase model or needs to motivate its potential users why to consider a redefinition of the production process. In accordance with these views the experts are afraid that the presented illustration of the process could discourage or even inhibit users. In particular the fact that some steps, such as “enriching” and “updating”, are not clearly defined or differentiated could potentially create misunderstandings. Besides, there is a perceived need for a validating step in between the above mentioned phases of “enriching” and “updating”.

QMPP Quality Matrix

The QMPP Quality Matrix is perceived to be highly useful in terms of considering different viewpoints and modalities for the evaluation of the products to be managed. Highlighting the four most significant views and aspects of quality evaluation, the level of detail is considered to be useful and the scheme appears comprehensible, since it addresses the most familiar elements of formal as well as informal learning. On the contrary the fact that the concept does not differentiate between the process and the product of learning, which from the experts’ point of view demand individual parameters and different methods of research, is considered to be inappropriate and demands reconsideration.

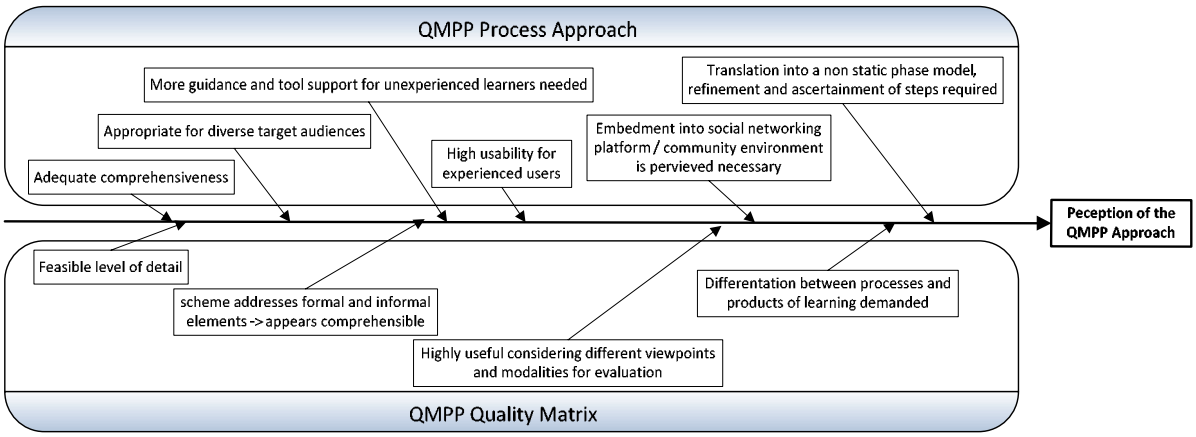


Figure 13: Perception of the QMPP Process Model and QMPP Quality Matrix

Summary of key points of quality related outcomes

Facing the challenges of quality assessment and development of peer produced E-Learning content it is fundamental to put the attention on processes, behaviours and measurements of standardization and consensus building rather than outcomes or knowledge reproduction in order to achieve a supporting structure for the evaluation, coordination and systematization of creative, spontaneous and collaboratively created outcomes. Consequently it is essential to provide concepts, methods and instruments that help peers to exploit the potential wisdom of crowds by means of social interaction and networks for the purpose of enabling a peer's personal growth, social integration and learning capabilities while gathering, combining and evaluating content with regards to its rigor, veracity and up-to-dateness as well as its usefulness and suitability for predefined objectives. With regards to supporting structures and indicators such as tools, guidelines and decision factors, the QMPP Process approach and Quality Matrix exemplify a comprehensive, appropriate and feasible framework that however needs to be a little bit more specific and guiding in certain aspects and requires to be embedded into community environment in order to be intelligible and applicable for every sort of stakeholder who is participating in the process of learning, evaluation, and knowledge creation.

4.3.2.3 Overarching Areas

a) Appraisal if evaluators of peer produced output should be co-designers of the output?

The outcomes of the expert panels concerning the appraisal of the question if evaluators of peer produced output should be co-designers of the output are twofold.

First of all there is a perceived need to let e-learning products with a scientific background be evaluated by a responsible and competent scientific community. Concerning e-learning contents created within companies, the necessity to follow a set of steps is constituted. These steps however should adhere to companies' respective guidelines and publishing policies. Subsequently the consultation of a team of experts such as analysts and lawyers, who validate outcomes and workflows to drive content production, should complete the validation process.
Beyond that the peer communities are required to define a set of parameters and criteria exemplarily based on instructional design models, before starting the process of creation and in order to adjust the peer production process and its outcomes to the particular subjects and the fields of development. According to the experts, this will help to diminish the potential for confusion and misunderstandings and thereby eventually provide a basis for smoothly proceedings of production.
Finally it is agreed on the fact that the employed strategies should imply auto-evaluation and peer review -phases. Even though there also is a strong perception that the final validation often not occurs until the product is used by someone outside the group that created it. This final validation by individuals external to the group is considered to especially important in regards to assessing the attainment and achievement of specified goals and objectives of production.

b) What are the strategies and processes for enhancing Peer Production?

It is understood that in order to develop high quality peer produced e-learning content the participating peers need to be competent and well versed in the corresponding subject. This qualification is considered to be the key precondition for further measures and arrangements such as setting guidelines and defining a range of creativity. Accordingly the balance between knowledge/expertise and creativity is regarded to be the crucial factor and the main prerequisite for organizations which aim to add further strategies to enhance the quality of their peer produced content. In particular the experts named two other broad cognitions, identified within the educational context, which have the potential to improve the quality of outcomes.

- The experts consider that a development motivated by a perceived and shared need inside the group accounts for positive effects on the peers' work ethics and working moral. Further on the outcomes of products developed out of a concrete need for learning are expected to have a fundamentally higher potential for future reuse.
- The appliance of a "learning-team-centred" approach of course organization similar to those known from popular social networks and communities of practice, which utilize wikis and blogs as the primary way of interaction, is regarded to have an striking impact on the effectiveness of peer production.

c) How to deal with the risk, that including quality principles into peer production processes could negatively influence the potential for creativity and innovation?

The degree of and potential for creativity is, according to the experts, highly depending on the context in which the production takes place. Comparing approaches of peer production within the educational contexts with those within corporate contexts, the extent to which peers can exert their creativity seems to be much more controlled and very limited in all the steps of the production process of corporate contexts. In addition to that, the balance between creativity and rules is considered to have differing impacts on different products. Accordingly products which have to follow strict procedures before being published naturally require more elaborated and stricter interpretation of rules and therefore consequently delimit the potential for creativity and spontaneous production.

Summary of key points of overarching areas

Regarding the assessment of outcomes by co-designers of the content it is highly important to distinguish between, and adjust in accordance to, the contextual background (scientific/corporate), field of development and particular subject of production in order to define, assign and modulate appropriate strategies, guidelines and criteria for working steps such as self-assessment, peer reviews, social recommendation, auto-evaluation and final validation which need to be dedicated to specific phases of evaluation. Besides empowering peers in terms of competence and qualification, an intrinsic motivation such as a perceived shared need for learning inside the group and a “learning-team-centred” approach such as those utilised by social networks and communities of practice as Wikipedia, are considered to be effective strategies with a strong and enduring impact on the enhancement of peer production. Further on the feasibility of creating a balance between creativity and rules is not only considered to be greatly depending on the context (educational/corporate) of production but also to have highly differing impacts on different products and in the case of the strict publishing procedures applied in the corporate context, are definitely delimiting the potential for creativity and spontaneity.

ANNEX 1: EXPERT PANEL REPORTS

ANNEX 1.1: EXPERT PANEL REPORT - GERMANY

General Description of the Expert Panels

Name of the responsible QMPP partner organisation:	EFQUEL (test panel in Innsbruck)
Name of the responsible rapporteur(s):	Ulf Ehlers, David Riley, …
Name of the hosting organisation: *(in case different from the responsible QMPP partner organisation)*	EFQUEL → EFQUEL workshop
Location of the verification meeting: *(please report country and city)*	Innsbruck
Date of the Expert Panel:	25 JUNE 2008
Number of participants:	15
Profile of participants: *(please include names of involved QMPP partners and of external panellists; please add as many rows as necessary)*	Educational Experts Teachers (HE, School, VET) E-Learning Experts

#	Last name	First name	Name of organisation	Role within organisation/ Expertise with intergenerational learning	Contact details
1					
2					
3					
4					
5					

Format of the verification process:	X 1 = Learning Café; ❑ 2 = Reflective Workshop/Focus Group Discussion; ❑ 3 = Audio/Web Conference.
Means of contact:	X 1 = Face-to-face Meeting; ❑ 2 = Telephone Interview; ❑ 3 = Online Consultation.
Agenda of the Expert Panel: *(please add a detailed agenda of the expert meeting)*	See attached, in line with the suggested agenda for expert panels
General description / aspects of the Expert Panel:	

Outcomes of the Expert Panels

(please describe the different elements and criteria as detailed as possible)

❶ What is the **object** of the quality assessment?	• Process of learning, communication and interaction rather than outcomes of learning • Behaviour rather than knowledge reproduction • social networks as assets of social interaction can be assessed for quality	
❷ What are the **dimensions** of the quality assessment?	• Personal growth and development of own individual learning capabilities • The social network which as been created has to be taken into account because web 2.0 learning focuses on this. • The group processes and the "social system" has to be assessed.	
❸ What are **methods** and **instruments** to assess/develop quality?	• to assess outcomes • A problem is that learning in web 2.0 scenarios takes place in a serendipitious manner and can not be assessed from pre-defined standards. • A problem is that material if it is developed by the stakeholders and not the experts might not be correct. • In web 2.0 scenarios the "crowds" have more wisdom than th individual expert. This wisdom needs to be taped into. • There might be a garbage in garbage out problem because there is now correcting expert?! • Quality development in web 2.0 learning demands for a consensus and an empowerment of the learners to assess and evaluate their own learning. It is not always compatible with institutional guidelines and regulations.	
❹ What are the **stakeholders** of the quality assessment?	• Everybody participating in the social process • There is no separation anylonger between teachers and learners, all are stakeholders of the learning environment	
Additional Aspects	**QMPP Process Model**	**QMPP Quality Matrix**
Usefulness		
Usability		
User-friendliness		
Comprehensiveness	It seems to be comprehensive an covers many aspects	
Comprehensibility	Difficult to connect to the real life - how can it be applied?	
Appropriateness (for different target groups)	The problem is that is suggests a structured and ohased approach for a potentially chaotic process of disruptive learning processes. Web 2.0 learning can not be analysed with static phase models. Therefore th model needs translation	
Recommendations (for necessary improvements)		
Additional comments		

Annex 1.1.1 Outline of the Expert Panel - Germany

A) Short Introduction to QMPP

- ◊ Rationale, objectives, envisaged outcomes
- ◊ Web 2.0 Technologies e.g. blogs, wikis, podcasts, social bookmarking, personal learning environments, e-portfolios
- ◊ Peer production
- ◊ Quality assessment
- ◊ Initial and Continuous Vocational Education and Training (I-VET, C-VET), Continuous Professional Development (CPD), skills, competences
- ◊ Introductory questions:

a) Is quality in peer production processes with Web 2.0 applications manageable?
b) Is quality manageable with traditional approaches (e.g. ISO, EFQM)?
c) Is there a generic process model of peer production?

B) Presentation of 3 QMPP Practice Cases

Short presentation of 3 QMPP practice cases e.g. IAVANTE, www.azubi.net, Finish Elevator Company (optional)

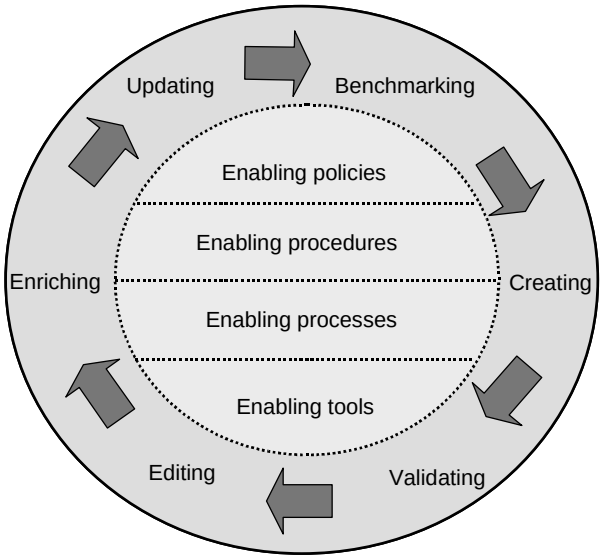
C) Discussion I: Case Assessment & Suggestions for Improvement

Three Speed Cafés on the three best ways to develop / to improve the quality of peer production in the 3 QMPP practice cases.

D) Presentation of Changes from Web 1.0 / E-Learning 1.0 → Web 2.0 / E-Learning 2.0

E-Learning 1.0	*E-Learning 2.0*
Quality assessed through experts	Quality assessed through learners and peers
Learning platform	Personal Learning Environment
Content	User Created Content
Curricula	Learning diaries/e-portfolios
Course structure	Communication
Tutor availability	Interaction
Multimedia (Interactivity)	Social networks / Communities of Practice (CoP)
Acquisition processes	Participation processes

E) Presentation of the Process Model of Peer Production



- **Creating**
  - ◊ (shared) authoring of courses, texts, resources, wikis; creating images, audio materials, video materials etc.
- **Validating**
  - ◊ validating content with subject matter experts, validating content with peers, rating the content etc.
- **Editing**
  - ◊ shared editing, undertaking peer reviews, creating alternative navigational routes etc.
- **Enriching**
  - ◊ creating additional content materials, wikis, publishing individual works and team works, sharing or learning (b)logs, social bookmarking etc.
- **Updating**
  - ◊ monitoring existing content, updating existing content, adding specific area content etc.
- **Benchmarking**
  - ◊ identifying of good cases and practices, identifying of good digital resources, sharing learning experiences by sharing learning (b)logs etc.

F) Presentation of the Peer Production Quality Matrix & related Research Questions

❶ What is the **object** of the quality assessment? • Learning process • Work/business process • Degree of communication/participation • Learning achievement/outcomes • Learning object, course content, resource etc.	❷ What are the **dimensions** of the quality assessment? • Pedagogical • Technological • Economical • Institutional • Organisational • Cultural etc.
❸ What are **methods** and **instruments** to assess/develop quality? • Self assessment • External assessment • Peer review • Collaborative dialogue etc.	❹ What are the **stakeholders** of the quality assessment? • Users • Experts etc.

G) Discussion II: Benchmarking the Quality Assessment in Peer Production Processes with Web 2.0 Applications

Four Learning Cafés on how to benchmark the quality assessment of peer production processes with Web 2.0 applications by relating the Peer Production Quality Matrix with the Process Model of Peer Production

H) Rapport from the Learning Cafés & Final Plenary Discussion

ANNEX 1.2: EXPERT PANEL REPORT - ITALY

Introduction

The objective of the Work Package 3 'Benchmarking Peer Production' is to identify key approaches of quality management in peer production of e-Learning content by benchmarking peer production practices and processes in other areas (such as the creation of technical documentation, joint editing efforts etc). The key activities include structured benchmarking of other areas of peer production of digital content and the organisation of three Expert Panels, which are aiming at exploring the experiences in peer production mechanism, processes and practices.
The purpose of the present document is to summarise the outcomes of the Expert Panels in Italy on benchmarking approaches for the peer production of (digital) content (as developed within Work Package 2 and 3).

The report is structured in three chapters:
a. the first chapter is aimed at describing the organisation of the expert panel and the profile of the Italian expert panel.
b. The second chapter illustrates the results emerging from the completion of QMPP questionnaire and individual interviews.
c. The third part presents some conclusions derived from the consultation of the Italian expert panel.

Organisation and description of the Italian expert panel

The selection of the experts to be included in the panel had been made by Pier Giuseppe Rossi (university of Macerata) and Claudio Dondi (Scienter) taking in consideration the agreed decisions made in the previous steps of projects and the need to make a choice consistent with them; two main issues were considered:

- the necessity to identify a proper number of experts to be effective for the specific aim: following the directions agreed in the Bologna meeting and in order to have a homogeneous overview among the panels in Germany, Spain and Italy the number of Italian experts has been defined to be seven;
- the relevance to focus on different backgrounds: with regards to the previous project activity for WP2 in which partners presented and described different case studies from three main contexts (higher education; corporate; vocational training) and in order to offer a wide range of viewpoints Italian experts were chosen from both the educational field and the corporate context.

The organization of the panel required a preparatory phase which occurred before the summer break when experts were individually contacted by e-mail to check their availability and schedule a meeting.

Due to the summer period in Italy it was not possible to organize a F2F meeting and since the delay should have been too long to be able to gather data in the due time for the synthesis report Michela Moretti (Scienter) and Laura Fedeli (Università di Macerata) organized the panel in two phases which let experts contribute individually at a distance:

- a questionnaire has been sent via e-mail (see annex I) along with a descriptive brochure of the Project that was translated into Italian to be better accessed by the national experts;
- once received the questionnaire back a phone interview was scheduled to deepen open questions (see annex II).

Description of Expert panel

As you can see from the table below the seven experts cover different professional contexts whose range goes from the public institution (Universities, national research centers) to the private corporate of different size from little-sized ones to large corporate companies.

#	Last name	First name	Name of organisation	Role within organisation	Contact details
1	Amicucci	Franco	Amicucci Formazione	Legal representative	af@amicucciformazione.com
2	Colorni	Alberto	Politecnico Milano Centro METID	President	alberto.colorni@polimi.it
3	Pescuma	Saverio	ISFOL	researcher and European project manager	s.pescuma@isfol.it
4	Renesto	Ivan	Microsoft Italy	Education Technology Advisor	i-ivanr@microsoft.com
5	Ravotto	Pierfranco	CIDI Milano	Expert	pierfranco.ravotto@gmail.com
6	Simone	Aurelio	Università Roma Tor Vergata	Director IAD; president of Siel (Italian society of e-learning)	direttore@scuolaiad.it presidente@sie-l.it
7	Trentin	Gugliemo	CNR Genova Institute for Educational Technology – Italian National Research Council	Senior researcher	trentin@itd.cnr.it

Results from the consultation of the Italian expert panel

1. Defining the key characteristic of a peer

To define the characteristics of a "peer" experts focus on the attitudes that would be critical, as underlined in the following viewpoints, a peer has to:

- be open-minded and be able to listen to others;
- possess strong relational skills and auto-critical skills,
- show a good relationship management, that is the skills to enroll people towards mutually beneficial goals,
- have a deep subject matter competence in a specific sector
- be aware of what being part of a community means: kind of interaction which can occur (not to be just a lurker but be an active member and react to stimuli), times of interaction (the exchanges among peers have to be quick and prompt)

2. Defining the meaning of "peer group/community"

The definition of peers' characteristics is strictly related to the concept of peer community, experts reported their vision of a peer group underlining the following aspects:

- Different communities (e.g. students, teachers) require a different definition but generally speaking in a peer group members are willing to share materials, re-edit existing ones and create knowledge, they have a clear and explicit objective to support each other to grow together;
- There' no hierarchy for what concern roles among members but conversely a hierarchy determined by the confidence acquired from experience and competencies of some members, this kind of authority is generally naturally recognized by the group;
- the openness towards the other communities and realities is relevant even if the range of it is conditioned by the specificalness of the subject the group deal with;
- the group necessarily recognizes a set of shared communication and operational modalities (implicit for the members);
- within the group there can be a range of levels of members' participation (from the lurker to one who contributes just if fostered and the one who spontaneously offers his/her contribution such as materials, know-how because perceive the relevance for the group);
- when we speak about "sharing" it's proper to underline that also learning paths and projects can be shared by members and not only single materials (e.g learning unit as L.O.)

3. Defining the meaning of PEER PRODUCTION

From the definition of peer production provided in the questionnaire: "the digital content created, edited, enriched by peers, in other words by people on the same hierarchical level" experts underlined a variety of inputs:

- the need to distinguish between teachers' peer production and learners' peer production. In the latter case the definition fits well but in the former case it wouldn't be appropriate to stick to digital contents only and would be better to extend the concept to the structure (project) of educational modules and/or whole courses, or at least to the path proposed to the learner;
- the relevance of recognizing the value of a complex process within production (creation, sharing and editing) and the need to focus on the perceived need of "peers" to share the same filed of interest and significant objectives as the starting point to stimulate production;
- The process of creation/production requires the peer group to show an initial openness towards the inputs that can arise from different directions;
- The risk hidden inside the expression "hierarchical level": it seems to refer only to people of the same organisation. It would be better to highlight that often the collaboration is amongst people who are not colleagues in the same organisation but that could also be suppliers if we deal with companies.

4. Learning from EXPERIENCE: peer production developed within experts' institution

We can summarize experts' direct experience by splitting the data they reported into two main areas:

1. **contexts in which e-learning products were created:**
   - educational activities in educational technology teachers' training
   - post graduate courses when it is required a final project work
   - collaborative production of LOs by teachers in school projects (www.sloopproject.eu, Sharing Learning Objects in an Open Perspective; Sir2: www.tes.mi.it/sir2portale)
   - few examples of production of learning contents by students
   - new experimental models in ICT use must be tested within research activities of the institute;

2. tools used for the production, development and editing:
Since most ITD e-learning peers activities concern the use of networked collaborative learning strategies the tendency is to use digital material which is not necessarily structured and designed according to ODL criteria; rather than designing actual e-learning contents there's a tendency to collaborate in the design and reuse of e-learning based processes:

- ◊ LCMS (Moodle) and platforms in which it is possible to develop collaborative work(C.S.C.W);
- ◊ web 2.0 applications (delicious, flickr, youtube; environments such as wiki, weblogs; e-mail/mailing list; web forum);
- ◊ HTML editors (like GoLive or DreamWeaver);
- ◊ L.O. editors (eXe, Reload), applications enabling you to create interactive exercises (HotPotatoes), logical maps (CMAP);
- ◊ In the case of Microsoft Italy specific applications for the production of multimedia contents are used such as "Learning Essentials 2.0" for Microsoft Office; THESIS e-learning product suite

5. Products/artifacts created by peers in the above mentioned experiences

The final products appear to be mainly:

- ♦ LOs dealing with different subjects (mostly when the contents are related to computer technologies, fields where the knowledge changes quickly);
- ♦ the storyboards of the above mentioned learning object;
- ♦ articles, book chapters, internet resources and sometimes materials produced by learners during course activities (wiki, problem solving, reports, documents etc.);
- ♦ tutorials (PPT/Flash) about for example "How to use Reload", "How to use Rss", "How to JavaScripts"
- ♦ With regard to the reuse of those products experts underlined the following aspects:
- ♦ the "littler" are the learning units produced the more they can be reused and be made available for other paths;
- ♦ besides contents it's possible to reuse a model, a course structure as for example some learning paths developed within Moodle;
- ♦ the material developed by students during courses, it is often made available to participants of successive courses:
  - ◊ as material to be added in a shared repository;
  - ◊ As complementary educational material (appropriately revised by the teacher);
  - ◊ as material for discussions and comparison.

6. Process Model of Peer Production

The general perception of the QMPP process model is that appears as a complete process whose steps give an adequate comprehensiveness; it seems to be appropriated for different target audience, not only teachers and researchers (with pedagogical skills) but could also be implemented for students or other users. Even though almost all experts stated that the model show a good comprehensibility there's a concern about users who are not deeply involved in formal e-learning contexts, they, in fact, could need a more guided and argumentative approach to really understand the process and optimize all the steps.
The entire process seems to be planned to work perfectly in a Connected Learning Community, shows a good usability, but somehow conditioned by the presence of a social networking platform to create a community environment, templates and wizards to drive authoring users, workflows describing the process model.
Being the peer production practices underlined in the project (Wikipedia, Facebook, etc) mostly informal, spontaneous and etero-directed it would be good to have guidelines to inform users about the usefulness to set a redefinition of the production process otherwise the model could be perceived as a distracting element rather than a fruitful one.
The formalization of the process in the way it's presented could inhibit users, demotivate and disorient them, besides some steps are not clearly definite and may create misunderstandings like the difference between the steps "enriching" and "updating".
It's also recommended to clarify that within those steps a validating step is needed.

A. PEER PRODUCTION QUALITY MATRIX

The matrix reveals as highly useful since the evaluation of the product undoubtedly has to be managed taking in consideration different viewpoints and modalities. The model is detailed and its four components underline the main aspects and actors for a quality evaluation.
The whole scheme is very comprehensible since it's connected to elements of both formal and informal learning that are nowadays very familiar.
Nevertheless with regard to the appropriateness it seems a little reductive to tie the same list of evaluation (1) to both the process and the product which would require individual parameters as well as different methods of research that are not necessarily overlapping.

B. FACING COMPLEXITY: THE EVALUATOR OF THE QUALITY OF A PEER PRODUCED OUTPUT IS ALSO A CO-DESIGNER OF THE OUTPUT

Two main aspects arose from the interviews with the experts: the need to make the products be evaluated by the scientific community and for those e-learning contents created in companies, the need to follow a set of steps: adhere to company guidelines (publishing policies), consult a team of experts who validate contents and after lawyers' validation a workflow drive contents to complete the validation process.
The peer community should set the parameters and criteria (e.g. from instructional design models) before starting the process of creation according to the subject and the field, in this way there won't be space for confusion and the process would proceed smoothly.
The strategies to set should imply an auto-evaluation and a peer –review phase during the whole process but there's also the perception that the final validation occurs when the product is being used, it's the one who reuses that product (outside the group that created it) who can actually check its quality and one of the parameter to consider is that the product to be valuable should finally reach the due objectives.

C. STRATEGY AND PROCESSES FOR ENHANCING PEER PRODUCTION

The necessary condition for a peer group to be able to produce content of quality is to have the due competencies in a specific subject, just in this case the same peer can set their guidelines and also define the range of creativity.
Creativity and subject matter experience (and their balance along the production process) can be the key elements for an organization to foster peer-production, some of the strategies that have been identified in the educational context (school, universities) and can be applied to enhance the production are:

- the creation of a product has to develop from a perceived and shared need inside thegroup: for example during a university course slower students may need to be helped in the comprehension of rough materials and more expert colleagues can be fostered to produce tutorials or additional study material to be accessed by those peers; in this case the same products could be easily reused in the following course since the were born from a concrete learning need;
- The whole organization of the course has to have a learning-team-centred approach similar to those that refer to community of practice and social networks and which utilize wikis and blogs to interact.

D. QUALITY VERSUS CREATIVITY/INNOVATION: RISK OF INCLUDING QUALITY PRINCIPLES IN A PEER PRODUCTION PROCESS

Different contexts show a highly different approach towards creativity. When we compare educational context like schools projects and context like corporates we find that in the latter the control over creativity is strong and present in all the steps of the production process.
The balance between creativity and rules seems to have a relevant value for quality mostly when we deal with specific products that have to follow strict procedures before being published.

Conclusion

To conclude we would like to highlight the interests Italian experts showed in the research area and in the direction the QMPP Project gave to development of the topic.
Even though the modality we were forced to choose to conduct the panel (due to summer break and short times) is not the most fruitful way to gather data for two main reasons:

- the inquire was run individually (with no interaction among experts);
- the used channels can't offer such a wide opportunity to discuss ideas, doubts, suggestions

we are very satisfied with the inputs we received and glad to confirm that the wish to offer a more productive contribution and the awareness of the relevance of the research made the experts explicit their availability for a future commitment along the project to share their experience and provide their support in the validation process.
Besides, one of the most relevant aspects we believe it could be a source of reflection among the partnership is the general concern perceived by the experts about the need to define a quality system that is able to avoid a too rigid process which could inhibit the production.

ANNEX 1.2.1 QUESTIONNAIRE FOR THE ITALIAN EXPERT PANELS

Profile

Last name: _____

First name: _____

Name of organisation: _____

Role within organisation/Expertise with intergenerational learning: _____

Contact details: _____

QUESTIONS: PEER PRODUCTION

1. ***Peer production: the digital content created, edited, enriched by peers, in other words by people on the "same hierarchical level".***

   Does the above definition need to be modified or enriched? What is your definition of peer production?

   _____

   _____

   _____

   _____

2. ***Is peer production present in your work context? If yes, how has it been developed by your institution?***

   _____

   _____

   _____

   _____

3. In case you activated strategies in order to foster peer production in your context

☐ A What procedures did you follow to **create** e-learning contents?

☐ B What procedures do you follow for checking or for the **validation** of contents?

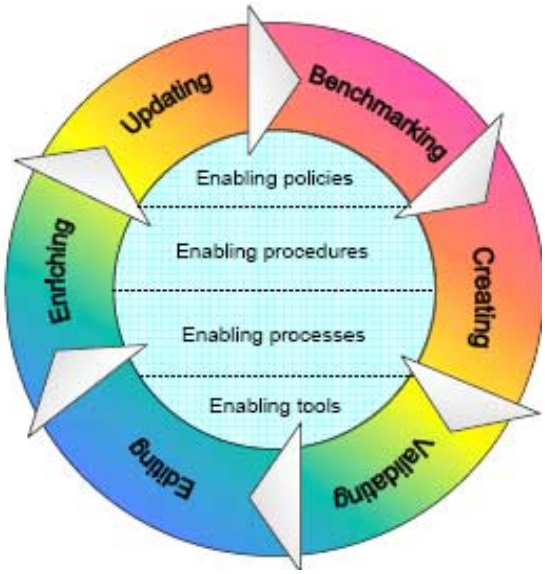
☐ C Which e-learning tools do you use?

4. Describe the products/artifacts created by peers in the above mentioned experiences

5. How were your products used/reused?

QMPP PROPOSAL

1. Presentation of the Process Model of Peer Production



- **Creating** – (shared) authoring of courses, texts, resources, wikis; creating images, audio materials, video materials etc.
- **Validating** – validating content with subject matter experts, validating content with peers, rating the content etc.
- **Editing** – shared editing, undertaking peer reviews, creating alternative navigational routes etc.
- **Enriching** – creating additional content materials, wikis, publishing individual works and team works, sharing or learning (b)logs, social bookmarking etc.
- **Updating** – monitoring existing content, updating existing content, adding specific area content etc.
- **Benchmarking** – identifying of good cases and practices, identifying of good digital resources, sharing learning experiences by sharing learning (b)logs etc.

1.1 Research Questions

	QMPP Process Model
Usefulness	
Usability	

	QMPP Process Model
User-friendliness	
Comprehensiveness	
Comprehensibility	
Appropriateness (for different target groups)	
Recommendations (for necessary improvements)	
Additional comments	

2. Presentation of the Peer Production Quality Matrix

❶ What is the **object** of the quality assessment? • Learning process • Work/business process • Degree of communication/participation • Learning achievement/outcomes • Learning object, course content, re source • etc.	❷ What are the **dimensions** of the quality assessment? • Pedagogical • Technological • Economical • Institutional • Organisational • Cultural • etc.
❸ What are **methods** and **instruments** to assess/develop quality? • Self assessment • External assessment • Peer review • Collaborative dialogue • etc.	❹ What are the **stakeholders** of the quality assessment? • Users • Experts • etc.

2.1 Research Questions

	QMPP Quality Matrix
Usefulness	
Usability	

	QMPP Quality Matrix
User-friendliness	
Comprehensiveness	
Comprehensibility	
Appropriateness (for different target groups)	
Recommendations (for necessary improvements)	
Additional comments	

Thank you for your contribution!

ANNEX 1.2.2: ITALIAN EXPERT PANELS GRID FOR INTERVIEW

Reference questions used in the interview

1. Deepen the definition of "peer" focussing on your own work context
2. Which characteristic does a group have to show to be considered a "peer community"?
3. Specify the experiences in which peer production occurred and how the artifacts were reused
4. How does the evaluation of peer production have to be managed, which dynamics does it develop, which methodologies and tool does it need to be activated?)
5. Which are the processes that can foster the quality in the peer production ?
6. Can the introduction of methods to evaluate the quality of peer production inhibit creativity and reduce its potentialities?

ANNEX 1.3: EXPERT PANEL REPORT - SPAIN

General Description of the Expert Panels

Name of the responsible QMPP partner organisation:	SCIENTER España & IAVANTE
Name of the responsible rapporteur(s):	Miguel Ángel Muñoz
Name of the hosting organisation: *(in case different from the responsible QMPP partner organisation)*	IAVANTE
Location of the verification meeting: *(please report country and city)*	IAVANTE Granada (CMAT) Parque Tecnológico Ciencias de la Salud Granada (SPAIN)
Date of the Expert Panel:	26th September 2008
Number of participants:	9

Profile of participants:

#	*Last name*	*First name*	*Name of organisation*	*Role within organisation*	*Contact details*
1	Castro	Carlos	Universidad de Granada	He is teacher of School of Library and Information Science, but he have been responsible for 10 years of the regional policies of Information Society in Extremadura	Carlos.gnulinex@gmail.com
2	López Calero	Mabel	Fundación I+D del Software Libre	Technical Manager in this foundation for research in the open source software	milopez@fidesol.org

3	Soledad	Fuentes	Consorcio Fernando de los Ríos	Technical Manager in this public consortium responsible of the Guadalinfo network (public network of ITC centres of resources in Andalusia)	Soledad.fuentes@jutnadeandalucia.es
4	Sebastián	Torres	Grupo TADEL / ESEA	eLearning Responsible	stores@grupotadel.com
5	Purificación	Cerón	IAVANTE	Responsible of eLearning Programs	puriceron@iavante.es
6	Sabas	Casas	Intecna Soluciones	General Director	scasas@intecna.es
7	Miguel	Gea	CEVUG	Director	mgea@ugr.es
8	Oscar	Martín	CEVUG	Design Technician	omartin@ugr.es
9	Emilio	Arjona	CEVUG	eLearning Technician	emilio@ugr.es

Format of the verification process:	❑ 1 = Learning Café; ☑ 2 = Reflective Workshop/Focus Group Discussion; ❑ 3 = Audio/Web Conference.
Means of contact:	☑ 1 = Face-to-face Meeting; ❑ 2 = Telephone Interview; ❑ 3 = Online Consultation.
Agenda of the Expert Panel: *(please add a detailed agenda of the expert meeting)*	Welcome and short introduction to QMPP Presentation of the experts Setting the Scene Presentation of the experts' experiences Definition of Peer Production Presentation of the Process Model of Peer Production & Discussion Presentation of the Peer Production Quality Matrix & Discussion Conclusions
General description / aspects of the Expert Panel:	The selection of the expert had been made by Scienter España and IAVANTE in the Andalusia area in order to make a presential session. They have been involved not only for this expert panel, but as *Advisory Group* for all the phases of the QMPP project. There was selected 9 organisation: - Mr. Carlos Castro was seleted for his personal experience as responsible of a regional strategy to promote the Information Society in the Extremadura region. - Mrs. Isable Pérez, responsible of different initiatives for the development of learning material for foreign languages through teachers communities. - Fundación I+D del Software Libre, a professional community for development in the open source area

	especially in JAVA. - Consorcio Fernando de los Ríos, as responsible of the Guadalinfo network, that is trying to create a professional knowledge repository of their community of coordinators of the Guadalinfo Centres. - Grupo TADEL / ESEA, training Group active in the elearning area. - People who work in the professional communities of IAVANTE - Intecna Soluciones, an innovative software house in the Health Technological Park of Granada. - CEVUG, responsible of the digital strategies of the University of Granada. - Portal EVA, responsible of the training strategies of RETA, the Andalusian Network of Technological Areas, the most important community of innovation enterprises in the Region. Finally Mrs. Perez ad Portal EVA expressed their impossibility to participate in this meeting, but they showed interesting to be involved in future activities of this advisory group. The CEVUG asked about to involved 3 people because they are working in different strategies of scientific peer production communities and they are very interesting in the results of this project. INTECNA, that doesn't worked specifically in the learning area expressed that they are very interesting in any process to make tacit the production of knowledge of their professionals.

Outcomes of the Expert Panels

After presents the different experiences of the Group, the expert agree the wide approach of the QMPP project, expressed in the matrix with the critical dimensions of setting of the objectives and the structure.
But a central question that the expert asks to the project to better clarifies: *When a digital resource o material created through a peer exchange can be considered a "learning content"? There was peer production process that finishe in a common knowledge, but not in a real product.*

For the rest, the group agrees the usefulness, usability, user-friendliness, comprehensiveness and comprehensibility of the QMPP process model.
Quickly, the group has opened the discussion about aspect of the Quality Matrix, so the coordinators of the session had decided to propose the same activity that was used in the Microlearning Conference.

The result of the activity was:

❶ What is the **object** of the quality assessment?

- Evaluation against Coordination
- Systematization of spontaneous knowledge building processes
- Consensus building:
  - Awareness (peer reviewers)
  - Trust
  - Cohesion
  - Participation
  - Criteria to achieve the consensus
- Behaviours of:
  - Peers
  - Potential Students
  - Community
  - Producers of the learning material
- Organisation of the peer group
- Oriented to results:
  - Typology of contents
  - Ways to record and tag the contents
- Achieve of the proposed objectives:
  - Measuring instruments
  - Level of satisfaction of users
- Methodology
- Planning and control of activities
- Communication process
- Usefulness of contents:
  - Effectiveness – Measuring of knowledge
  - Standardisation of the contents

❷ What are the **dimensions** of the quality assessment?

- Motivation and recognition
- Freshness – updating
- Rigor and Veracity of results
- Content <=> Process to arrive to the content
- Clear definition of the context:
  - Characteristic of peers
  - Learning area (vocational, professional, educational,…)
  - Open or close environment
- Peer group:
  - Satisfaction with process
  - Satisfaction with results
- Final users:
  - Satisfaction
  - Adaptation
- Dimension of the peer group
- Instruments and tools:
  - Suitability
  - Competences of the group (sometimes the better expert group is not able to use ICTs)

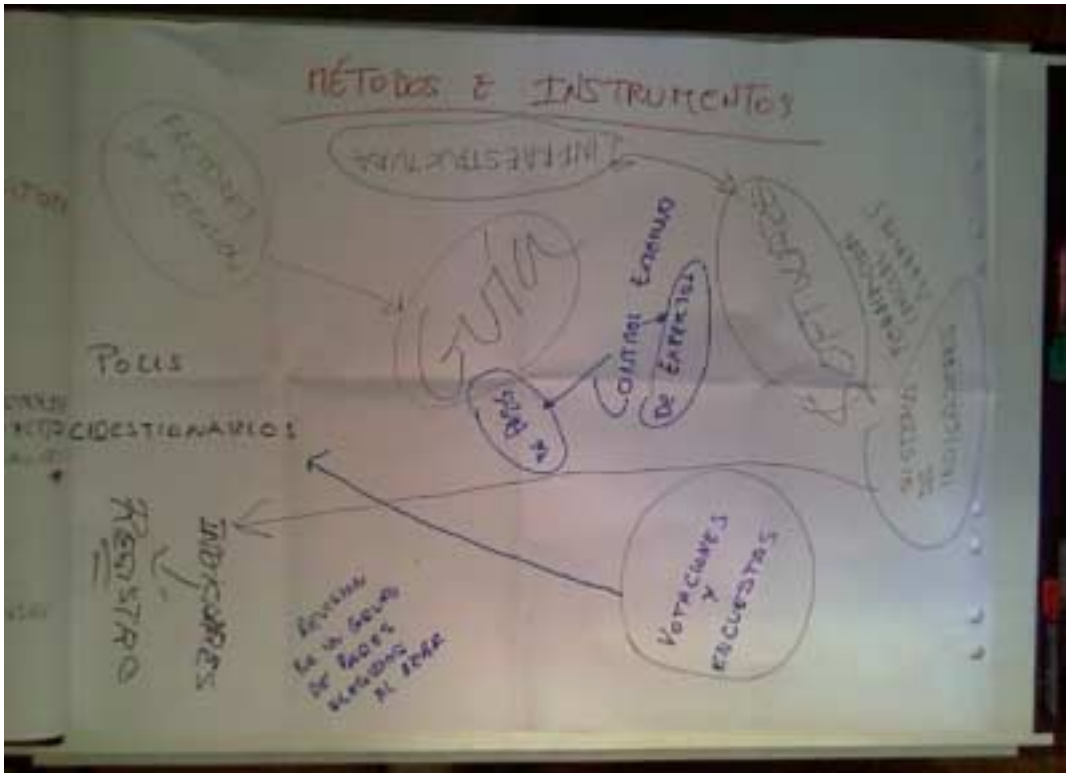
❸ What are **methods** and **instruments** to assess/develop quality?

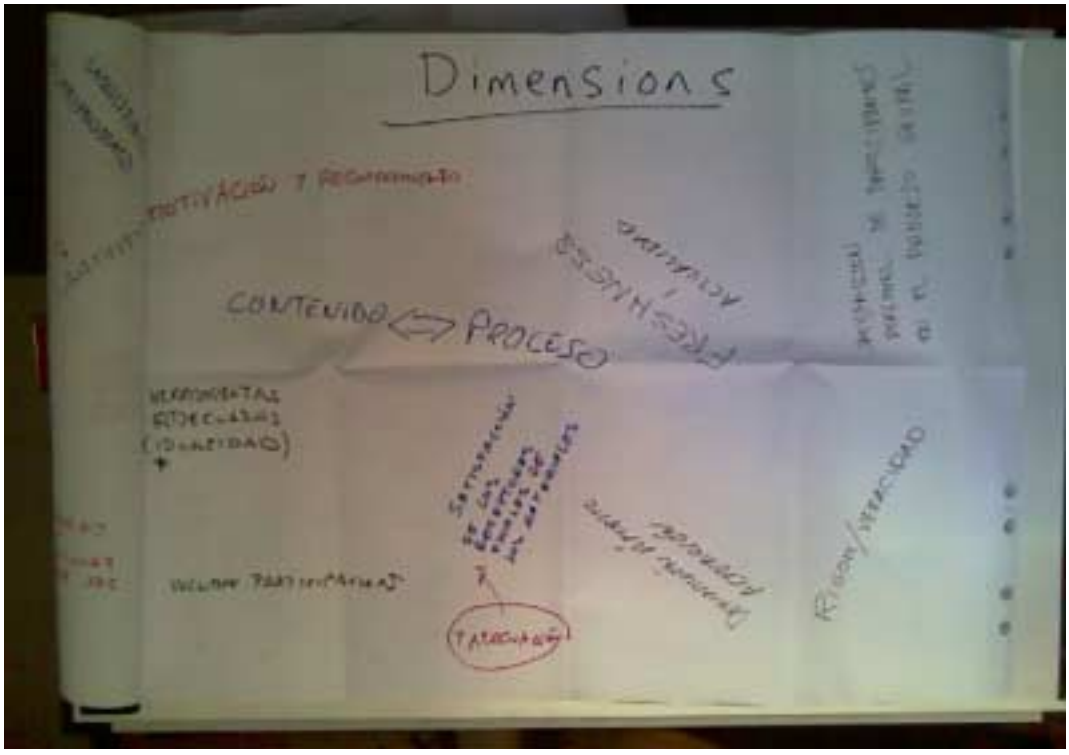
- System of indicators:
  - Records available in tools -> Attention to infrastructures and software
- Pools, surveys and questionnaires
- External audit:
  - Other peers – Way to selected:
    - Random selection
    - Voluntaries
    - Reference group
  - Experts
- Guidelines -> Decision factors
- Competencies: Initial training of the peer group

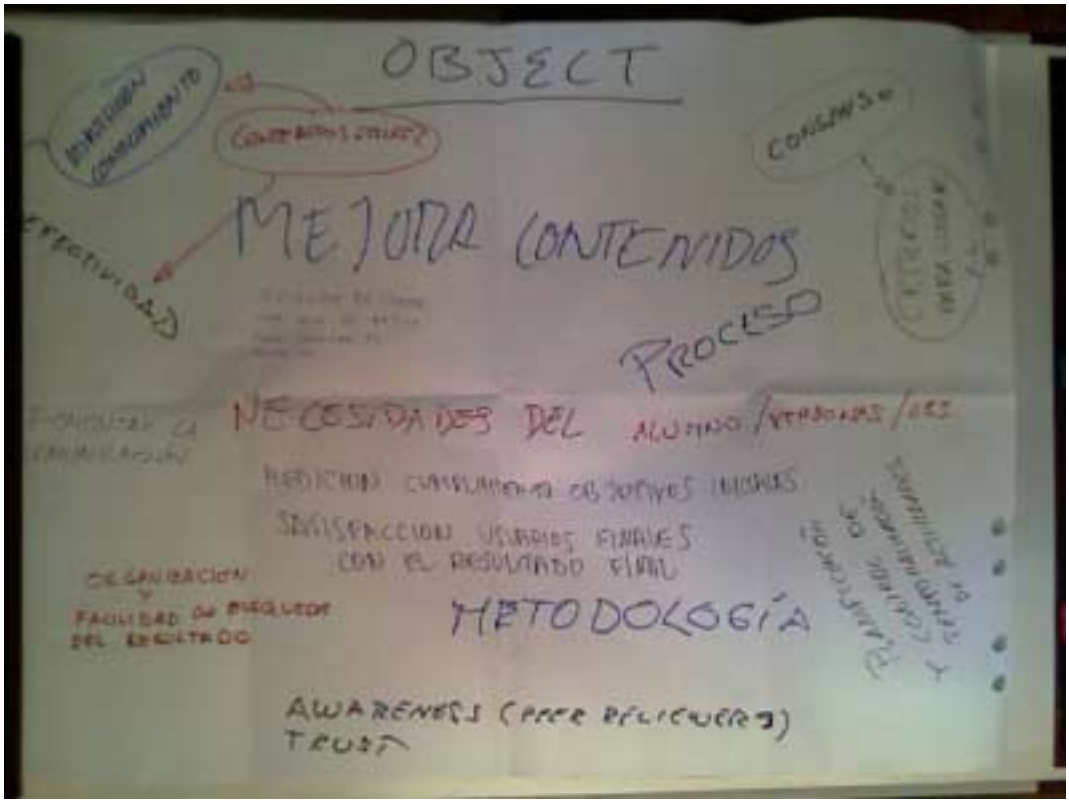
❹ What are the **stakeholders** of the quality assessment?

- Peers:
  - Particpants
  - External
- Potential Students
- Community / Organisation
- Producers of the learning material

ANNEX 1.3.1: IMAGES OF THE EXPERT PEER PRODUCTION QUALITY MATRIX






OBJECT
MEJORA CONTENIDOS
PROCESO
NECESIDADES DEL
METODOLOGÍA
AWARENESS
TRUST

ANNEX 2: REPORTING TEMPLATE AND EXPERT PANEL OUTLINE

Grant Agreement Number 2007-1961 / 001 – 001 LE3 MULPRO

QUALITY MANAGEMENT FOR PEER PRODUCTION ON E-LEARNING

Work Package	
Document Title	
Date:	
Confidentiality status:	☐ Public ☐ Project partners only
Version:	1
Editor:	
Contributors	

TABLE OF CONTENTS

1. About this Document

The purpose of the present document is to summarise the outcomes of the Expert Panels in three European countries i.e. Finland, Italy and Spain on benchmarking approaches for the peer production of (digital) content (as developed within Work Package 2 and 3).

The objective of the Work Package 3 'Benchmarking Peer Production' is to identify key approaches of quality management in peer production of e-Learning content by benchmarking peer production practices and processes in other areas (such as the creation of technical documentation, joint editing efforts etc). The key activities include structured benchmarking of other areas of peer production of digital content and the organisation of three Expert Panels, which are aiming at exploring the experiences in peer production mechanism, processes and practices.

In order to guide the discussions an outline for the Expert Panels has been produced, which sequences the following activities or elements (see Annex I for more details):

A) Short Introduction to QMPP;

B) Presentation of 3 QMPP Practice Cases;

C) Discussion I: Case Assessment & Suggestions for Improvement;

D) Presentation of Changes from Web 1.0 / E-Learning 1.0 → Web 2.0 / E-Learning 2.0;

E) Presentation of the Peer Production Quality Matrix & related Research Questions;

F) Discussion II: Benchmarking the Quality Assessment in Peer Production Processes with Web 2.0 Applications;

G) Reporting from the discussions.

Furthermore the QMPP partnership agreed on three different formats for the Expert Panels:

- Learning Cafés;
- Reflective Workshops/Focus Group Discussions;
- Audio/Web Conference.
- The report is divided into two chapters: the first chapter provides a general description of the Expert Panels:
- Responsible partner organisation, name of rapporteur(s), name of hosting organisation;
- Place, date and timing of the meeting;
- Involved experts;

- Applied approach (i.e. Learning Cafés, reflective workshop/focus group discussion, audio/web conference);
- Means of contact i.e. face-to-face/telephone/online;
- Agenda of the meeting;
- General description/aspects of the meeting.

The second chapter gives then a summary of Expert Panels according to the four main elements of the QMPP Quality Matrix:

- Object of the quality assessment;
- Dimensions of the quality assessment;
- Methods and instruments to assess/develop quality;
- Stakeholders of the quality assessment.

In addition the QMPP Process Model and QMPP Quality Matrix should be briefly assessed according to the following criteria:

- Usefulness;
- Usability;
- User-friendliness;
- Comprehensiveness;
- Comprehensibility;
- Appropriateness (for different target groups);
- Recommendations (for necessary improvements).

2. General Description of the Expert Panels

Name of the responsible QMPP partner organisation:	
Name of the responsible rapporteur(s):	
Name of the hosting organisation: *(in case different from the responsible QMPP partner organisation)*	
Location of the verification meeting: *(please report country and city)*	
Date of the Expert Panel:	
Number of participants:	
Profile of participants: *(please include names of involved QMPP partners* and *of external panellists; please add as many rows as necessary)*	

#	Last name	First name	Name of organisation	Role within organisation/ Expertise with intergenerational learning	Contact details
1					
2					
3					
4					
5					

Format of the verification process:	❑ 1 = Learning Café; ❑ 2 = Reflective Workshop/Focus Group Discussion; ❑ 3 = Audio/Web Conference.
Means of contact:	❑ 1 = Face-to-face Meeting; ❑ 2 = Telephone Interview; ❑ 3 = Online Consultation.
Agenda of the Expert Panel: *(please add a detailed agenda of the expert meeting)*	
General description / aspects of the Expert Panel:	

3. Outcomes of the Expert Panels

(please describe the different elements and criteria as detailed as possible)

❶ What is the **object** of the quality assessment?		
❷ What are the **dimensions** of the quality assessment?		
❸ What are **methods** and **instruments** to assess/develop quality?		
❹ What are the **stakeholders** of the quality assessment?		
Additional Aspects	**QMPP Process Model**	**QMPP Quality Matrix**
Usefulness		
Usability		
User-friendliness		
Comprehensiveness		
Comprehensibility		
Appropriateness (for different target groups)		
Recommendations (for necessary improvements)		
Additional comments		

ANNEX 2.1: OUTLINE OF THE EXPERT PANELS

A) Short Introduction to QMPP

- Rationale, objectives, envisaged outcomes
- Web 2.0 Technologies e.g. blogs, wikis, podcasts, social bookmarking, personal learning environments, e-portfolios
- Peer production
- Quality assessment
- Initial and Continuous Vocational Education and Training (I-VET, C-VET), Continuous Professional Development (CPD), skills, competences
- Introductory questions:
  a) Is quality in peer production processes with Web 2.0 applications manageable?
  b) Is quality manageable with traditional approaches (e.g. ISO, EFQM)?
  c) Is there a generic process model of peer production?

B) Presentation of 3 QMPP Practice Cases

Short presentation of 3 QMPP practice cases e.g. IAVANTE, www.azubi.net, Finish Elevator Company (optional)

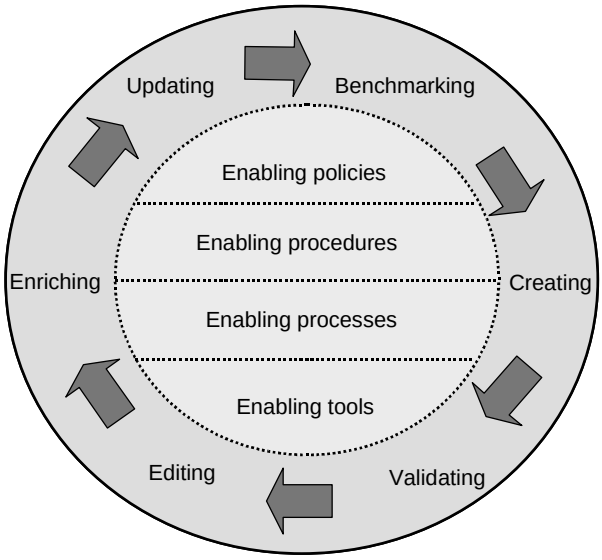
C) Discussion I: Case Assessment & Suggestions for Improvement

Three Speed Cafés on the three best ways to develop / to improve the quality of peer production in the 3 QMPP practice cases.

D) Presentation of Changes from Web 1.0 / E-Learning 1.0 → Web 2.0 / E-Learning 2.0

E-Learning 1.0	***E-Learning 2.0***
Quality assessed through experts	Quality assessed through learners and peers
Learning platform	Personal Learning Environment
Content	User Created Content
Curricula	Learning diaries/e-portfolios
Course structure	Communication
Tutor availability	Interaction
Multimedia (Interactivity)	Social networks / Communities of Practice (CoP)
Acquisition processes	Participation processes

E) Presentation of the Process Model of Peer Production



- **Creating**
  - (shared) authoring of courses, texts, resources, wikis; creating images, audio materials, video materials etc.
- **Validating**
  - validating content with subject matter experts, validating content with peers, rating the content etc.
- **Editing**
  - shared editing, undertaking peer reviews, creating alternative navigational routes etc.
- **Enriching**
  - creating additional content materials, wikis, publishing individual works and team works, sharing or learning (b)logs, social bookmarking etc.
- **Updating**
  - – monitoring existing content, updating existing content, adding specific area content etc.
- **Benchmarking**
  - identifying of good cases and practices, identifying of good digital resources, sharing learning experiences by sharing learning (b)logs etc.

F) Presentation of the Peer Production Quality Matrix & related Research Questions

❶ What is the **object** of the quality assessment?	❷ What are the **dimensions** of the quality assessment?
• Learning process • Work/business process • Degree of communication/participation • Learning achievement/outcomes • Learning object, course content, resource etc.	• Pedagogical • Technological • Economical • Institutional • Organisational • Cultural etc.
❸ What are **methods** and **instruments** to assess/develop quality?	❹ What are the **stakeholders** of the quality assessment?
• Self assessment • External assessment • Peer review • Collaborative dialogue etc.	• Users • Experts etc.

G) Discussion II: Benchmarking the Quality Assessment in Peer Production Processes with Web 2.0 Applications

Four Learning Cafés on how to benchmark the quality assessment of peer production processes with Web 2.0 applications by relating the Peer Production Quality Matrix with the Process Model of Peer Production

H) Rapport from the Learning Cafés & Final Plenary Discussion