

# Quality Criteria for Open Courseware and Open Educational Resources



Monica Vladoiu



# Subject

- set of quality criteria that serve as general guidelines for development, use, modification, evaluation, and comparison
- four categories: content, instructional design, technology and courseware evaluation
- *social and constructivist perspective*



# Open Courseware

- MIT OpenCourseWare program (2100+ courses)
- OpenCourseWare Consortium (6000+ courses)
- Open Education Resources Commons (38000+)
- The Saylor Foundation's Free Education Initiative (200+/241 courses - 13 majors)
- Rice University's Connexions -20000 resources
- Coursera (121), Carnegie Mellon Open Learning Initiative, Harvard Medical School's MyCourses, Webcast.Berkeley etc.



# Quality criteria

- categories: *content, instructional design, technology and courseware evaluation*
- *quality in use, internal and external product quality* according to ISO/IEC 25000 SQuaRE
- covered user needs: effectiveness, efficiency, satisfaction, reliability, security, context coverage, learnability, and accessibility
- quality assessment of either small learning units or an entire courseware



# Content related (1)

- *Criteria that reveal to what degree an educational resource allows learners to have engaging learning experiences that provide for mastery of the content*
- readability
- uniformity of language, terminology, and notations
- availability of the course syllabus
- comprehensiveness of the lecture notes



## Content related (2)

- possibility to select the most suitable learning unit
- opportunity to choose the most appropriate learning path
- top-down, bottom-up or combined approach
- availability of assignments (with or without solutions)



## Content related (3)

- *resource related*: accuracy, reasonableness, self-containedness, context, relevance, availability of multimedia inserts, and correlation with the entire course



# *Instructional design (1)*

- *Criteria that address the instructional design, and other pedagogical aspects of teaching and learning for that resource*
- goal and learning objectives
- appropriate instructional activities
- learning outcomes
- availability of the evaluation and auto-evaluation means





## *Instructional design (2)*

- learning theory
- instructional design model
- *reflective learning opportunities* in which the desired outcome of education becomes the construction of coherent functional knowledge structures adaptable to further lifelong learning



## *Technology related (1)*

- *both open educational resources and open courseware are expected to benefit fully from ICT technologies, to have user-friendly interfaces, and to comply with various standards*
- conformity with standards for interoperability
- compliance with standards for accessibility
- extensibility (both instructors and learners)



## *Technology related (2)*

- user interface's navigational consistency and easiness, its multimedia appearance
- supporting technology requirements at user's end
- the prerequisite skills to use the supporting technology
- multi-platform capability
- supporting tools
- security of users' confidential information



# *Courseware evaluation (1)*

- *Despite of the original claim of just offering high quality educational materials, all major open courseware initiatives have recently become more involved with their learners*
- *Hence, regular assessment of effectiveness of open courseware becomes essential, along with using the results for further improvements*



## *Courseware evaluation (2)*

- *courseware overview*: content scope and sequence, intended audience, grade level, periodicity of updating the content, author's credentials, source credibility, multiple-languages, instructor facilitation or semi-automated support, suitability for self-study and/or classroom-based study and/or peer collaborative study, time requirements, grading policy, instructions on using the courseware



## *Courseware evaluation (3)*

- availability of prerequisite knowledge
- availability of required competencies
- matching the course schedule with learner's own pace
- availability of repository or institutional policies
- bias and advertising freeness
- providing a formal degree or a certificate of completion



## *Courseware evaluation (4)*

- appropriate user interface
- suitable design and presentation of educational content
- *participatory culture and Web 2.0 facets:* contribution to the content, collection of users' feedback, collaboration with fellows, sharing the development/using experience



# Already put the QC to “work”

- Evaluation and Comparison I - presented at QWE2012 - 12<sup>th</sup> Int’l Conf. on Web Engineering 2012
  - MIT OpenCourseWare on Database Systems
  - The Saylor Foundation’s Introduction to Modern Database Systems
  - Stanford’s Introduction to Databases
- Evaluation and Comparison II - to be presented at CCSTED2012 - 11<sup>th</sup> Int’l Conf. on Web-based Learn.
  - University of Washington’s Open Courseware on Data Structures and Algorithms
  - The Saylor Foundation’s Open Courseware on Elementary Data Structures





## Conclusions (1)

- put into practice the quality criteria, and learned from this experience how to develop them further
- for the time being the evaluation is subjective, being based on more than 20 years of author's experience in Higher Education, particularly here, in teaching Databases
- there is no preoccupation yet for considering explicitly learning theories or instructional design models



## Conclusions (2)

- new quality criteria: support for learners coming from other learners, opportunity for peer collaborative learning, availability of quick guides of relevant software, and providing links to related relevant resources
- extended quality criteria: accessibility needs to be seen at a higher level, not only as web accessibility, but as concerning access to as many people as possible to the open educational content



## Conclusions (3)

- security of confidential information included in *terms of use*, along with copyright and licensing issues, anonymity, age restrictions, netiquette, updating or deleting personally identifiable information, security for *primary, secondary* and *indirect users* in terms of ISO/IEC 25000 SQuaRE



## Future work

- compliance with existing quality standards, educational theories and best practice in the field
- each measurable criterion has to be evaluated in a quantifiable way, by devising an appropriate scoring or rubric system that will help users and other evaluators to “measure” open courseware
- the inspection procedure for quality evaluation and comparison needs to be taken to the next, more formal, level, aiming at providing a quality evaluation framework



## Final conclusion

- having many open courseware available, the struggle for quality will be encouraged for users' benefit, being them learners, instructors, faculty, developers, and educational institutions



Thank you! 😊