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Standardization and valorisation of digital educational materials

Sonja Prišćan, Blaženka Divjak, Nataša Hoić-Božić, Goran Hudec, Sunčana Kukolja Taradi, Petar Pervan, Sonja Špiranec, Milan Taradi

Presenters here: Jasna Tingle and Blaženka Divjak



Background - problems

According to results of the CARNet's program "Educational projects" two main obstacles for using ICT in educational process:

- Lack of technical support for creation of educational materials
- Absence of procedure for valorisation of production of digital educational material in the process of promotion of university teachers



Background –actions

1. Lack of technical support

- **Referral centers for e-education** – providing information and technical support for creation and application of digital materials in educational process

2. Absence of procedure

- **Multidisciplinary team** (mostly university teachers) - to prepare a document which could be used by Croatian universities during categorization, valorization and evaluation of digital educational materials



Referral centres for e-education

- <http://www.carnet.hr/referalni/obrazovni>
 1. Development of Educational Materials
 2. Selection of Hardware and Software in E-education
 3. Teaching Methods and Communication in E-education
 4. Evaluation of Courseware
 5. E-education Project Application
 6. Self-assessment and summative assessment in E-education
 7. Development of Multimedia Elements and Their Adaptation to WWW



Motivation starting point

- Creation of digital educational materials counts towards promotion and tenure
- Croatian's Rectors Conference encompassed in it's latest regulations digital educational contents as an equal and regular element in the teacher evaluation process
- E-learning – a formal part of the University Statute



The new CARNet team

- Multidisciplinary team- mostly consisted of university teachers
- **The goal:** to deliver recommendations and proposals and prepare a document which will (or could) be used by Croatian universities during categorisation, valorisation and evaluation of digital educational materials by yielding criteria for improving the quality of educational resources



Five thematic units

1. the categorisation of digital learning material
2. recommendation of standards within the production of digital educational material
3. repository specification
4. software guidelines regarding the production and use of digital educational material
5. recommendations concerning the review process
i.e. the technical and pedagogical features
relevant to the review of digital educational
material



CATEGORISATION OF DIGITAL LEARNING MATERIAL

- a prerequisite for valorisation in the process of tenure and promotion of academic teachers
- existing categorisations of printed learning material can't be completely applied in the world of digital resources, particular due to their technical capabilities



CATEGORISATION OF DIGITAL LEARNING MATERIAL

- **Categories** of digital educational material proposed:
 - digital textbook
 - digital coursebook
 - digital collections of assignments
 - digital exercise book
 - instructions, materials for lab exercises
 - simulations
 - animations
 - digital catalogues for particular themes
 - online tutorials
 - virtual tours



RECOMMENDATION OF STANDARDS

- **Two main groups** of standards for digital educational materials:
 - standards that define how the digital learning resources communicate with LMS and LCMS tools
 - standards which define **the prerequisites of learning objects** (including digital educational material in general) in order to import them into LMS or LCMS or to store them into repositories of digital educational material
 - refers to metadata for the description of learning material
- recognized as relevant
- **Conclusion:** results from existing international efforts should be adopted and used in Croatia

IEEE Standard for Learning Object Metadata is proposed



REPOSITORY SPECIFICATION

- A growing need for **organizing, storage and retrieval systems** that will allow to access and share resources
- No repository in Croatia
 - neither on a national nor on an university level
- “A great deal of digital material is either lost or not appropriate exploited due to the lack of mechanisms of organization and storage of those resources.”

Recommendation: implementation of a hybrid model is

- compulsory storage for several types of material (dissertations, diploma and master theses)
- the storage of associated metadata for other learning objects
- a decentralized or distributed model that links a variety of learning objects repositories



REPOSITORY SPECIFICATION

- identifies educational material and indicate it's features
- improves and upgrades the quality of e-learning
- rationalizes contemporary learning processes through the **reuse of LOs**
- offers tangible **indicators of an institution's quality**
- increases the visibility, prestige and perceived public value
- provides **certification of quality** (peer review)
- ensures **dissemination and accessibility of research**
- induces cross-fertilisation among disciplines
- contributes to the **functional integration of universities in Croatia**
- serves as an instrument for the evaluation of scientific production: helps the preparation of documentation for **promotion and tenure**



THE REVIEW PROCESS

- **Review of content** : similar to the known and accepted procedures used for printed resources
- **Review of instructional design** - elements which are unique to e-learning resources
 - review of the **technical validity** (metadata, link functionality, additional plug-ins, printability, security, interoperability...)
 - **pedagogical review** (instructions for use, definition of learning methods and scope, interactivity type and level, thesaurus, references, age range)
 - **design review** (clarity of layout, readability, fonts, colours)
 - **navigation review** (intuitivity, map, index, searching)
 - **multimedia element review** (graphics, animation, simulation, audio and video files)
 - **review of communication elements** (synchronous and asynchronous)
 - **review of assessment elements** (tests, pre-tests, self-assessment)
 - other (general impression, update, copyright)



SOFTWARE GUIDELINES

- general recommendations referring to software + some desired features on the side of the client and the side of the server
 - use of **open standards** which are directed towards the creation of functional and interoperable e-learning systems
 - no need for a special hardware or software for the end user
 - usability for **people with special needs** and disabilities
 - use of stable, flexible multiclient technologies
 - scalability and modularity of courseware (LMS)
 - use of authorware
 - use of secure management processes
 - automatisisation with feedback, graphical appealing and consistent environment, intuitive navigation, defined copyright, availability of help features.



CONCLUSION

- The documente - could serve as a **point of reference** (strategy paper, action planes etc.) and as a point of departure for **concrete implementations** (e.g. a national repository)
- Without the implementation of a framework articulated in form of recommendation and proposals the Croatian HE will be failing to **develop a critical mass** of high quality learning materials that are needed if e-learning is to be mainstreamed and a national learning resource infrastructure is to be built
- Need for further **dissemination** of the project results
- Document available on

www.carnet.hr/projekti/obr-standardi

