
Electronic Content for Austrian Schools: Creation, Distribution and Maintenance

INDEX

A) Electronic Content for Austrian Schools: Creation, Distribution and Maintenance (2003) Erlass I (Zl. 16.700/164-II/8/2003)

Educational Servers and Initiatives

B) Electronic Content for Austrian Schools: Educational Pool Austria, Project implementation (2004 – 2006) Erlass II (Zl. 629/1-III/03 v.22.8.2003)

1. eContent clusters structures in Western, Middle, Eastern and Southern Austria
2. Separation of Tasks
 - 2.1. Commercial Offers
 - 2.2. Topic based webportal
 - 2.3. Theme-based knowledge portals
 - 2.4. Portals for virtual classrooms
3. Funding Application for eContent Creation and Development for schools
4. Cooperation with the server operating organisation
5. School Homepage Award
6. eContent Festival

Federal Ministry of Education, Arts and Culture

*Excerpt of the suggestions of Electronic Content in Austria (2003; updated 2004) of BMUKK
Collection of links is only an overview and cannot offer the complete range of eContent-Initiatives
<http://www.virtuelleschule.at/e-content/>; <http://www.e-teaching-austria.at/>; <http://www.bmukk.gv.at>*

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A.) Electronic Content for Austrian Schools Creation, Distribution and Maintenance

Educational Servers and Initiatives

Since 2003 a number of initiatives were created to develop electronic teaching materials for educators and schools. These initiatives can be grouped in three categories:

- Supplement and extension of school books with electronic mainly web-based teaching and learning materials (e-learning and e-teaching resources)
- Activities of education servers (collection of schools for interesting courses, projects and thematic work groups in electronic form) and „Educational portals“ (web-supported services for educators and schools)
- web-supported teaching and learning materials, developed by dedicated educators and their students.

Here is an excerpt of the initiatives

- “Virtual School – VIS-AT“ (<http://www.virtuelleschule.at>) and the subject oriented portals: <http://www.schule.at/gegentand> in cooperation with the European School Network (EUN: <http://www.eun.org>), eSchola Europe“ (<http://eschola.eun.org>), „ENIS-Austria“ (<http://www.enis.at>) and the „European Netdays“ (<http://www.netdays.at>), a network of innovative schools with European background
- “Distance learning for Professionals till 2006 (FUBB - Fernunterricht in der Bildung Berufstätiger)”, a cooperation of schools for professionals with the task to develop electronic teaching material
- “eteaching in notebook classes e-teaching austria“ (<http://www.e-teaching-austria.at>)
- “Education Highway Upper Austria“ (<http://www.eduhi.at>)
- “Tyrolean Education Server (TIBS)” (<http://www.tibs.at>)
- “Bildungsserver Burgenland” (<http://www.bildungsserver.com>)
- „Informatikserver Steiermark“ (<http://www.informatikserver.at>)
- Portals of commercial schools (<http://www.hak.cc> and <http://www.handelsakademie.at>) deliver materials for commercial schools. A similar service for technical and medical schools is in development at the Education Highway Upper Austria (<http://www.hum.at>).
- The Education Servers <http://www.qis.at> (Qualität in Schulen) supplies guidelines, process proposals and instruments for analysis and improvement of teaching and learning quality.
- The Content-Cluster South, a cooperation between companies, universities and secondary schools
- Discussion portal <http://www.gemeinsamlernen.at> for promoting the implementation of the new syllabus, in the framework of the development of curriculum based material and school projects.

An essential part of the Future Learning Initiative (till 2007 eFit project) is the cooperation with companies (private public partnership), cultural organization and other national and international institutions whereby the joint development in the area of employee training and continued education and a funding of training in secondary and tertiary sector are made possible.

In the area of professional publishing the initiative „Schulbuch-extra“ (<http://sbx.bildung.at>) and products for the web-supported class made by content creating companies as for example Bitmedia (European Computer Driving License, language courses, preparation for IT certificates), KEA (Easy Business) and more have to be listed.

In teacher training colleges initiatives like „Promotics“ to promote business languages (Pädagogische Hochschule Salzburg) or the learning platforms of the education servers (Pädagogische Hochschule Tirol, Pädagogische Hochschule Wien) are in operation.

In the framework of a seven year teacher training program „Multimedia for BHS (berufsbildende höhere Schulen / professional school) teachers“ or „Tele Teaching Training“ learning software products are creating in up to six different product groups.

Recently we also connected to projects and initiatives of universities that create, testing or using electronic learning or teaching materials to be used in class. For example: the initiative „New Media in Teaching“ as „Planet-ET“ (<http://www.planet-et.at>) or the CD product “electro-magnetic fields and waves“ made by the Institut of electric equipment at the TU-Graz. Similarly we link to the content platform “Manila” operated by the Institut for Organisation and Learning at the University of Innsbruck <http://www.uibk.ac.at>.

We are trying to cooperate with Universities, done and implemented in the initiative „Linzer Rechtsstudien“ (<http://www.linzer.rechtsstudien.at>) and the e-learning courses of the Vienna University of Economics and Business Administration (learn@wu; <https://learn.wu-wien.ac.at/>).

For educators who create electronic content, many time together with their students we created a reward for their work through content contests, for example [L@mie-Award](#).

For all these projects and initiatives, as far as in the sphere of influence of the Federal Ministry of Education, common rules and standards for the creation, development and maintenance of content and its meta-data have to be found.

The usability and the opinion of the use are of highest importance to us: a well structured and clear presentation of information, an understandable selection of the desired information and a scientific format of the electronic content.

The econtent edict is the first step to clarify the complex area of content generation and make the support services of <http://www.bildung.at> a usable and helpful source for users.

Ministry of Education, Science and Culture
Zl. 629/1-III/03

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Extension 2004 (*Excerpt of the suggestions of Electronic Content in Austria (2003; updated 2004) of BMUKK*)

Based on the utilization model used for the access to content in universities a coordinated approach should support electronic content creating for the use in class at secondary schools in the framework of the initiative Future Learning initiative (former eFit Austria). However the econtent utilization model for Universities and Universities of Applied Science is different to the following rules for primary and secondary schools.

It is the goal of the initiative „**eLearning Content Cluster Austria**“ to develop a support system and electronically usable learning and teaching material for all important topics and subjects in secondary schools.

To implement these goals following approach is offered:

1. Development of definitions for items, formats and categories to be able to professionally store („eContent-Hosting“) and easily find available, supported or licensed electronic learning and teaching materials. The location for resource searches is the content portal <http://www.bildung.at> where all potential users can find electronic teaching materials for their expert topic or subject.

1.1 Definitions

1.1.1 The smallest unit of an eContent is an asset: it consists of a piece of information about a topic and is for example a worksheet, an image or a sketch with explanations or a small link collection. Example: a worksheet explaining a physical effect, a worksheet for learning a language using the software „Hot Potatoes“, an interactive java applets about the a term, two pages web quests about basics of electro-technics with feedback function.

1.1.2 A learning object consists of several learning assets plus information about the methodology (didactically structured, including motivational aspects, presentation of content, small knowledge tests and assessment). It is important that a learning module is a unit that can stand by itself e..g. is representing a self-contained unit. All important elements are implemented: motivation about the important of the content itself, content or lesson, feedback function or self-assessment.

1.1.3 A learning unit/lesson (corresponding to a teaching unit) consist of e-learning objects and combines those with a pedagogical concept and hints for class organisation in the meaning of blended learning (defined as combination of conventional presence teaching and eLearning). Design for one or two teaching units.

1.1.4 Learning units develop into courses (or in the sense of eLearning Cluster Projects to longer teaching unit sequencies) which allows teaching your class during a longer periode of 3 to 4 weeks up to one semester using the supportive electronic learning material. This includes materials of diverse format and form, individual learning of students and homework.

In the metadata specification of the education portal <http://www.bildung.at> there is a specific field for this information to be giving at “format of e-learning material (type of resource)”. This field should give the user a comprehensive overview about the size and complexity of the resource and the pedagogical concept.

1.2 eContent Supply

To be able to find electronic content of several servers in Austria a clear classification of every resource has to be maintained. A unique location (URL) has to be available, additionally a unambiguous identification has to be possible.

To classify and categorize every content item a metadata specification (based on the Learning Object Metadata (LOM) Standard) was developed that comprises theme-related fields and is based upon the schoolbook classification. It is mandatory that the metadata specification for content is followed. Like that assuring that content can be exchanged for example in the form of XML files and therefore electronically transferred from one technical system to the other. This is a pre-requisite for acceptance to any content pool.

The teaching materials are classified based on following topics (based on the curriculum) – first level:

Social studies (as far as relevant):

Religion;

German;

Languages;

History and political science;

Geography;

Philosophy and Psychology;

Mathematics;

Science (including medicine),

Economics and Law; Sports;

Art and Creativity;

Business administration;

Computer Science and Office-Management;

Occupational Theory and Practical Experience

Others.

Four educational levels map the subjects and topics: primary education (elementary school and special schools for handicapped children), secondary education including lower secondary education (high school) and upper secondary education (upper secondary schools, vocational schools) and post secondary education (colleges, academies). The econtent edict mainly covers secondary education but the content portal <http://www.bildung.at> also includes the other levels.

The classification of topics, first level and educational level is implemented in form of a matrix.

The second level defines the topics in detail, the classification used is based on the schoolbook classification.

2. Quality Management for eContent Creation:

Quality and acceptance criteria for econtent creation are listed by every content pool operator, education server or publishing house and authors are required to fully comply with them, especially those who receive compensation for their work. The creation of samples that comply with all requirements is very useful. In every case interactivity, animation, complexity and innovation of the eContent material are used for its evaluation. A way to assess the quality of the eContent is proposed in many cases.

The following ten rules are a code of practice for eContent creation of good eLearning objects/modules. It is clear that diverse pedagogical applications (lessons, topic, target group and more) need different interpretations and emphasis.

Following principles should be taken into account during econtent creation:

- 1. Correct:** The contents of the learning materials and modules are technically correct and correspond to the latest scientific findings. The knowledge obtained is illuminated by varying points of view and encourages critical argumentation. Distinction between facts and valuation is assured. The social relevance of the instructional contents is pointed out.
- 2. structured:** The structure of those learning materials is clear and modular and obvious for the pupil/student. The materials are oriented at training aims, which are communicated to the pupil/student. The learning person has responsibility for the setting of emphasis and/or for the path through the teaching materials ("self-steered learning").
- 3. emotional:** The pupil/student is addressed and motivated to begin and continue the work with the module. Accompanying measures regarding content (actuality, previous knowledge, relevance for the learning person, etc.) or form ((target-group-specific Design, guidance figure and/or guidance motive, humorous elements, etc.) will ensure this function.
- 4. adaptive:** It is intended that pupils/students with different previous knowledge, interests and abilities can approach the learning materials. This is achieved by offering additional materials and the ability to select individual pathways through the learning materials. Thus, a larger audience can be addressed.
- 5. interactive:** Interactive possibilities of the new media are used. The pupil/student is motivated to bring his/her own input and ideas to the learning progress. Interactivity is used both as a guide through the learning material and for examination.
- 6. communicative:** eLearning does not always mean learning individually. The learning materials have to motivate communication and cooperation between the pupils/students. The possibility of feedback and suggestions of improvement to the author provide a basis for the enhancement of future versions.
- 7. reflexive:** The learning materials contain exercises and quiz possibilities intended to show the pupils/students their weak points and knowledge gaps. Learning success is continuously checked and documented. Variable quiz possibilities are adapted to the contents and inspire analytic thinking.
- 8. explorative:** Explorative/detecting learning is preferred to specified factual knowledge. The pupils/students are motivated to form questions and find out answers by themselves. Additional materials which suggest the work with external sources and appropriate methodical guidance are part of the learning materials.
- 9. standardized:** The learning materials correspond to the IMS standard and can be integrated in learning platforms with full functionality. Current standards of user guidance, design and adaptation for persons with handicaps are considered. Categorization and metadata correspond with the standards of the bm:bwk.
- 10. legal requirements:** The learning materials contain all necessary formal elements (author, imprint, etc.). Integrated text, pictures, sound-files or videos meet the standards of copyrights or other regulations. Means to meet these standards are the agreement of the author, correct quoting and referring to the data origin. The learning materials are up to the standard of Austrian laws and regulations especially in the field of education and curriculum.

Find more information to quality criteria (German) at

<http://www.e-teaching-austria.at/autoren/additional/qualitaetskriterien.pdf> (brochure pdf, 2,7 MB)

Naturally the compensation for econtent creation is based on these quality criteria. In every case the materials have to be rested by another expert/ teacher to give feedback about the content itself, the application possibilities and pedagogical approach. In a general discussion forum all potential users, including students, should be able to post their comments.

3. Copyright

Generally the use of learning and teaching material and the duplication of it in any form for the use in class is covered by special rules. Schools and universities are allowed to use and duplicate material for their use in class. This is not valid for works that are designed for the use in education as in schoolbook and university scripts. A commercial use is not allowed.

A decision of the High Court on 17. December 2002 (Gz.4Ob248/02b) helps to clarify the use of copyright law in connection with electronic media: *If there is no chance to mistake the origin of information of a deep link, the deep link is admissible.*

In case a link is making a work visible in the meaning of § 1 of Urheberrechtsgesetz (UrhG), the person setting this link is responsible for making the website accessible for users. If this is connected with a temporary copying process (the saving of the information in the computer cache of the user) or a supporting copying process (the saving of the information in proxy server during data transmission on the Internet) of the work, this is a free work use according to § 41a UrhG.

For the creation of website, following rules and guidelines should be taken into account:

if the author of a website can be identified, quoting website is ok.

- Small parts of a website / work (an image, a sketch, a paragraph of a text) can be used for teaching in school or for education servers, when quoting the author of the text.
- if website are not covered by copyright law (due to their structure of graphical design), it is admissible to make parts of third party websites visible through links.
- commercial use of websites is a copyright infringement leading to market distortion and can be punished.
- important for the use in schools is the correct quoting and referencing to the source of the content (name, location, website, ...) and the consent of the author if longer texts and more comprehensive works are used on the school server for downloads. The contribution has to give the name of the author (including fotos and graphics).
- In case of images it has to be distinguished between the right of the creator and the right of the person portrait. It is absolutely necessary to get the consent of the person portrait (parent or the legal guardian). Personal rights are also covered under copyright law. It is not allowed to use fotos of persons if the interest of the person can be harmed in any way (see § 78 UrhG).

Therefore it is not recommended to use material from other creators. Usually the material in form of text, fotos and graphics is more meaningful than already existing material.

If educators take this thumb rules into account (a more detailed discussion of issues is found in a separate edict), educators and students are granted the legal protection of the bm:ukk for their econtent materials.

A detailed description of copyright rules and guidelines is implemented in a separate edict and is discussed in the discussion forum of MMag.Dr. Albrecht Haller, a copyright expert (30 frequently asked questions and answer about copyright law).

4. Compensation

Compensation is granted for the creation, distribution and maintenance of econtent materials by BMUKK.

eContent materials that are made available through content pools, education servers or the portal www.bildung.at for all schools in Austria and are indexed in the repository of the portal are granted compensation based on their effort during creation.

Compensation is given for the creation of eContent based on the definition of the learning object/module and are divided into five categories:

Category 1: simple resource (e.g. powerpoint website)

Category 2: simple module (created with authoring tool; pedagogical function integrated)

Category 3: module with simple animation (created with authoring tool)

Category 4: module with high animation (video integrated)

Category 5: very complex, animated and interactive modules about important topics.

Evaluation criteria are: interactivity, degree of animation, complexity, innovation, technical service degree, curriculum based, legal conformity (copyright law) and originality (in the sense of completeness of topics in our content pool on the education server). It is important that new econtent created about a topic is not already existing in a similar form in other sources. From the technical point of view the criteria a high availability and the respective maintenance of the content, especially when the module is not on one of the know content pools.

In case of more than 5 modules produced, special contracts will be arranged (Yearly contracts about topics or subjects; Scoutings (defined as searching and presenting usable web material)

A topic research is the basis for all new contracts.

eContent can not be sold twice –since authors are compensated for the econtent creation, the bm:ukk has the bought right of exploitation.

B.) Electronic teaching and learning materials for Austrian Schools- Education Pool Austria; Project Implementation from 2004 to 2006

During the course of validity of the eContent Edict several questions and reports have lead to further developments that have to be integrated into the edict in a second part.

1. eContent Cluster Structures in Western, Middle, Eastern and Southern Austria

It makes sense to integrate electronic teaching and learning materials into a network system. Cluster structures in the four areas of Austria were set up to develop competences and the content pool. The responsible cluster head reports to the bm:ukk person responsible for the education portal. Like that further developments are discussed on all levels.

2. Separation of Tasks

Content is not content – seen from the different viewpoints and target groups, a topic might be approached in very different ways. Additionally the technical form of content supply can differ.

2.1. Commercial offers are offers exclusively for schools or special licensing fees for the sole use in schools. Schoolbook Extra (SbX) is an successful example for this.

2.2. Topic-based Webportal

The topic-based webportal aims to present e-learning materials for all **topics and subjects** the curricula stipulate. Newly found materials are linked, decentrally developed pedagogical methods are distributed and important events for experts and educators are announced. Every topic has a responsible coordinator and a team, if needed, working on the development of the materials based on the eContent Edict Zl. 629/1-III/03. Technically we work with websites backed up by databases.

Currently there are about 30 topics, every coordinator is compensated for his /her contribution. In the future further development an even more modular content system is recommended.

2.3. Theme-based Knowledge Portals

Themes that are interdisciplinary, crossing or linking topics and possess lots of multimedia elements we created theme-based knowledge portals where resources are presented for a limited period of time.

Projects examples:

Austrian Castles, 50 years Austria, Austria’s EU Presidency, the Polygon of Economy, English in different knowledge areas, Open Source in Computer Science, Streaming Video Technology and more.

There is an open application strategy for funding possibilities, see <http://elearning.bildung.at>

2.4. Portals for Virtual Classrooms

Virtual classrooms, emerged from the project e-learning in laptop classes, develop special needs and requirements in the meaning that educators need to adapt their teaching process and pedagogical method to support each individual student to achieve the best results. It is clear that not only electronic learning materials is needed here, but mainly dialog and direct contact with the students. This is also true for educators and teachers who need to understand the different teaching context and its new possibilities to

adapt to each individual student. This is connected to the development of pedagogical methods for online and blended teaching and its standards as well as to the development of a school as a whole. The description of interactive forms, motives and reasons for students to learn are as important as the

material to be studied. A confirmation of this fact is given in scientific papers with headings like “New Learning in Organisations” or “Guidelines for Teaching Science”.

3. Funding Application for eContent Creation and Development for Schools

Access to forms at <http://elearning.bildung.at> or click on “eContent Einreichung” at the start page of www.bildung.at. You will find information about how to apply, quality criteria of learning and teaching materials, good practice examples as well as limitations and problem cases.

Following points to be taken into account:

1. Do not forget to submit your research results (including all links and sources you found) about your topic, check if similar materials already exist in the German speaking region. If so, your proposal might not be funded. If your proposal shows an improved or very innovative way of teaching a topic or subject, please state the reasons why you think so.
2. Complementing the eContent Edict Zl. Zl. 629/1-III/03 of 22. August 2003 **learning objects** according to 1.1.1. of the Edict are compensated with 50 to 100 Euros. They have to be meaningful in context and a self-contained unit.
3. It is highly recommended to supply the **meta data** according to the definition and descriptions on the education portal for each learning object and learning module with your funding application (see www.bildung.at, click on Content-Einreichung, and then download pdf-File Metadatenbeschreibung). These data will have to be included for all eContent in the future.

Evaluation Criteria (based on the eContent Edict Zl. 629/1-III/04):

1. Curriculum allocation. Is there any similar material (submit your research results)? Definition of target group (level, topics, age);
2. Originality;
3. Multimedia use, modularity, portability, timeliness;
4. Meta data (eContent Edict Paragraph 1.2);
5. Relevance of content
6. Coverage of curriculum topics, pedagogy used
7. Add-Ons; are materials better than existing ones?

After the receipt of the funding application e.g. the proposal for the development of teaching and learning materials from the authors the editorial team of the respective topic will go through the process stages of first evaluation, expert evaluation, contract, quality assurance and feedback from the content pool operator. If needed, improvement propositions and change requests will be supplied. It is possible to supply graphical and technical support for the implementation.

4. Cooperation with the Server Operating Organisation

During the last years diverse eContent materials in different forms were developed (e-learning objects, course system and topic portals, webquests and more). This development was very welcome. However now the focus has to be on the potential user and concentrate our efforts and resources on the white spots in the eContent map.

Educational portals and subject servers have to work together and cooperate. Development teams in missing subjects were implemented. It is highly recommended that education portals and subject servers technically and graphically coordinate their activities, link to each others resources and offer joint teaching training.

The user has to be able to find all information through links and access the respective meta data based on the eContent edict ZI.629/1-III/03. This cooperation is being implemented in many subjects (mathematics, languages, commercial subjects, science and computer science).

The content pool operators and education servers are invited to coordination meetings from the IT steering group, these meetings are usually combined with presentations of available eContent products and modules to disseminate the knowledge about available resources internally as well.

5. School Homepage Award

Based on the poll conducted the 6000 Austrian schools produced more than 2500 homepages. To reach the goal of the eContent initiative it only makes sense to integrate good practice content from these webpages.

Evaluation Criteria for School Homepages:

- a) School profile and mission statement of the school (look and feel, images and curriculum); short description of the school in one or two foreign languages.
- b) Services including important dates, school events. Services for parents and school partners in a password protected area - list of teacher absence and replacement teachers, current class schedules and calendars, test and exam schedule, teachers consultation hours (examples of services already used in innovative schools).
- c) The electronic availability of all teachers with an uniform school email address (for example name.lastname@schooldomain.at) has to be in place. In the future all students should be integrated into the school email system and have access to the school server.
- d) The history of the school can be slowly established through the archive of the school's event calendar.
- e) The school homepage should be the starting point for thinking about integrating virtual classes, when the webpage as "window to the outside world of the school" is replaced with a Content-Management-System (CMS).

School homepages complying with these criteria receive the quality approval of the Austrian School Homepage Award. The first award ceremony was held in June 2004.

6. eContent Festival

EContent and online lessons for all topics are publicly presented to teachers, educators and school partners once a year at an eContent Fair. Visitors can exchange experiences, pedagogical methods and create support networks. Commercially sold contents will be presented and can be licensed. The first eContent festival was held in spring 2005.