

Technical Guidelines for Digital Learning Content

1. *All content adheres to current W3C guidelines.*

Common standards are essential for effective content development. The W3C (World Wide Web Consortium) protocols and guidelines are recognized internationally as the most comprehensive for ensuring that Web sites are accessible by all members of the community. The work of the W3C has been instrumental in publishing open standards for Web languages and protocols. In addition, the W3C Markup Validation Service is a free service that checks Web documents in formats like HTML and XHTML for conformance to W3C Recommendations and other standards. Minimum guidelines include HTML 4.01. All documents should pass the W3C Markup Validation Service to ensure cross browser/platform compatibility.

2. *Content is IMS Content Packaging Specification (at least 1.0) conformant.*

IMS Content Packaging Specification promotes the adoption of open technical specifications for interoperable learning technology. It provides a standardized way for all types of learning content to be exchanged between systems. A package represents a unit of usable (and reusable) content.

SCORM identifies technical standards that enable Web-based learning systems to find, import, share, reuse, and export learning content in a standardized way. For a SCORM package to be interoperable, each SCO (a learning object that conforms to SCORM) must contain interfaces to the Learning Management System (LMS). Runtime environment (RTE) specifies three components, levels 1, 2 or 3, of the interfaces. The three functions are used for launching, tracking, diagnosing and completing SCORM-conformant content. If other certifications such as SCORM 1.2 are met, they should be identified in the Guide for Review.

3. *Content is SCORM 1.2 conformant as a minimum (includes IMS Content Packaging Specification 1.1.2).*

SCORM provides a common technical framework for the development of reusable learning objects for Web-based learning. The current SCORM version is preferred.

4. *All content is 508 conformant.*

Conformance to Section 508 of the federal Rehabilitation Act eliminates barriers in information technology, makes new opportunities available for people with disabilities, and encourages development of technologies that will help achieve these goals. Direction, guidance, resources and self-test and certification possibilities are included for checking conformance. Applications designed to address accessibility include, but are not limited to: Adobe Acrobat, Flash MX, Authorware, Real Media, QuickTime, Shockwave, Windows Media, PowerPoint, Word and Excel.

5. *All content follows the current Web Accessibility Guidelines (i.e. Web Content Accessibility Guidelines [WCAG] 1.0).*

These guidelines explain how to make Web content accessible to people with disabilities. Content should update to WCAG 2.0 when available.

6. *Content conforms to the National Instructional Materials Accessibility Standard (NIMAS).*

NIMAS is a national file format that guides the production and electronic distribution of digital versions of textbooks and other instructional materials so they can be more easily converted into accessible formats.

7. *Two dimensional graphics conform to current Scalable Vector Graphics (SVG) format.*

SVG is a language for describing two-dimensional graphics and graphical applications in XML. Two dimensional graphics in formats such as Flash! PNG or JPG should be made available in current SVG format as an alternative or the source should be available for conversion.

8. *Rich media are provided in the user's choice of format or the source code is provided to enable the user to convert the media to the format of choice.*

Rich media refer to a broad range of digital interactive media. Dynamic motion may occur over time or it may be in direct response to user action. Audio and video should be available in one of the commonly used formats such as QuickTime or Real Media in both low and high bandwidths. More than one available format is preferred

9. *Rich media are available in low and high bandwidths.*

Video, audio, animation or other rich media must be functional at speeds accessible by dial-up as well as DSL, cable modem or LAN. If the product does not operate at low bandwidth, then an alternative using still images and audio should be available.

10. *Copyrighted rich media and images are protected by technology that prevents them from being downloaded, saved or copied by students once they are placed in the course.*

This guideline conforms to requirements of the TEACH Act. Conformance may involve the use of streaming media, but it also should provide protection of images. Administrators should be able to turn the protection on or off so that content can be manipulated by designers but not by students. Reasonable access, such as limited numbers of print copies, should be allowed students for purposes associated with the course. This functionality should be designed in by course developers and not require institutional action or management.

11. *Multiple authentications are not required for users to access content through a secured Web site (Learning Management System, Content Management System, etc.).*
Providing easy access to content is integral to the end-users' experience. Use of third-party digital content should be seamless to end-users. When content is purchased, the LMS, digital content provider and the system administrator should be able to work together to provide a pass-through authentication for end-users, so that no additional authentication or access codes are needed.
12. *Coding will not disable LMS features when the content is used.*
Content code will not disable LMS features when used within the LMS. Content codes include but are not limited to: hyperlinks, table of contents, navigation elements and user modifications.
13. *Content does not contain code which limits full functionality in other delivery environments, such as cell phones and PDAs.*
Software and plug-in requirements must be provided.
14. *Content must be capable of being reorganized and replicated (within the legal terms of use) and remain fully functional.*
An example would include proper use of relative links within the content when rolling over the course to next term. Export and import materials should retain all original functionality.
15. *Content components can be replicated or updated in their entirety or in their individual parts (e.g., test banks, topics/modules, discussions, etc.).*
When a course is updated, portions of course content that were not changed should be capable of being easily replicated in the new course. Content may be hosted outside the institutional system by Application Service Providers (ASP). ASP solutions publishers shall provide the ability for the institution to archive user interactions, usage logs, record of work completed and performance.

In some schools, districts, and states laws require retaining student records. Usage logs and records of work completed have been used in legal issues regarding students. Digital content users should be aware of the regulations in their school and make sure the publishing company can comply.
16. *Content adopts a file naming convention which is unique, descriptive, meaningful and consistently applied as it relates to the organization of the content.*
To make locating and use of individual files efficient, file names must relate to the learning objectives. This enables each instructor to efficiently reorder content as needed.
17. *Test/question item banks are organized by the learning outcomes they are intended to assess.*
Banks should allow designers to preview and select individual files easily. Files should be organized into folders corresponding to chapters or learning objectives, or a catalog of the bank's content should be provided that includes: 1) designer notes outlining what a particular module, lesson, learning object or activity is intended to accomplish; 2) suggestions for how best to use it; and 3) estimates of the time required to complete the activity. At a minimum, keys, such as manifest files, should be provided to connect files to learning outcomes.
18. *Content maintains the privacy of users, security of information about users and security of users' content.*
Privacy of users, security of information about users and security of users' content must be maintained. In some schools, districts, and states, the Family Educational Rights and Privacy Act (FERPA) has been interpreted to mean that no student records can exist outside the district servers. Digital content users should query their school, institution and district on privacy of information requirements. Digital content users choosing to have content hosted by a third party should be aware of security procedures used by the host to protect student information and assessment data.
19. *Publisher provides the ability for the institution to archive user interactions, usage logs, record of work completed and performance.*
This applies to content provided through an Application Service Provider (ASP) solution, either within the content or separately. It should be possible for the institution to retain access to this information for a minimum of five years.
20. *At a minimum, technical support is provided for system technology administrators during standard business hours for the duration of the license.*
The amount of technical support needed by a school is a careful blend of several considerations. Each consideration will have cost implications with chosen vendors.

WEBSITES:

Technical Guidelines for Digital Learning Content & Digital Content Toolbox: <http://www.evalutech.sreb.org/digitalcontent/index.asp>

Presentation online: <http://alt.usg.edu/publications/>

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