Can dotLRN be administered by all professors?

Olga Revilla Muñoz*

*Itakora.com
http://www.itakora.com - itakora@gmail.com

Abstract. This paper presents the results of an accessibility analysis of the class administration level of dotLRN. It involves the analysis of the administration functionality of the educational packages: Lors (SCORM, IMS-CP, IMS-MD) and Assessment (IMS-QTI). The analysis presented is done on version dotLRN 2.3.1, with Zen theme, in the instance available for ALPE project (eTEN 029328), a validation project involving an accessible, standard based e-learning solution for visually impaired, hearing impaired and adult learners that lack basic skills.

Keywords: Accessibility evaluation, Administration, Class.

1 Introduction

dotLRN open source developers community is making a great effort to improve the front-end user interface of the platform to adapt it to the accessibility requirements proposed by the W3C Web Accessibility Initiative. Details are available in the following links:

- ***Accessibility Requirements for educational packages in dotLRN***. FLOSS International Conference 2007. Jerez de la Frontera (Spain). [1]
- ***dotLRN - Lors & Assesments Packages: Accessibility inspection. 20th April 2007.*** Workshop 'Experiences on Accessible eLearning Platforms' at "OpenACS and .LRN Spring Conference, Vienna 2007 (Austria).[2]

However, it is now time to start thinking on the accessibility of the back-end of the platform, that is, the administration options for the professors. In this paper, I try to contribute a bit to this effort with the revision of the accessibility status of two fundamental packages in dotLRN, since they provide the educational standards support in the platform (namely they implement SCORM, IMS-CP, IMS-MD and IMS-QTI specifications). These packages are LORS[3] and Assessment[4].

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[1] Available at: http://flossic.loba.es/Contenidos/actas/accessibility.pdf

[2] Available at http://openacs.org/storage/view/openacs-dotlrn-conference-2007-spring/01-LORS&Assessment_Accessibility_Analysis.pdf

[3] http://openacs.org/doc/current/lorsm/

[4] http://openacs.org/doc/current/assessment/

2 Scope of the analysis

There are three levels of administration functionality in dotLRN:

• **User level:** the control panel functionality, where any user of the platform (student, professor, administrator…) can edit her personal information, upload a picture, change her password, change her language, manage her notifications, etc.
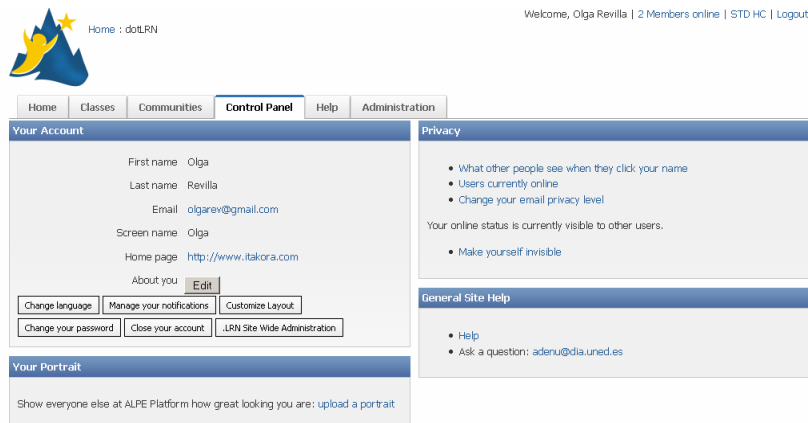

Fig. 1: Control panel

• **Class level:** this functionality is available for the course responsible to customize the course space where the students will follow the course activities.
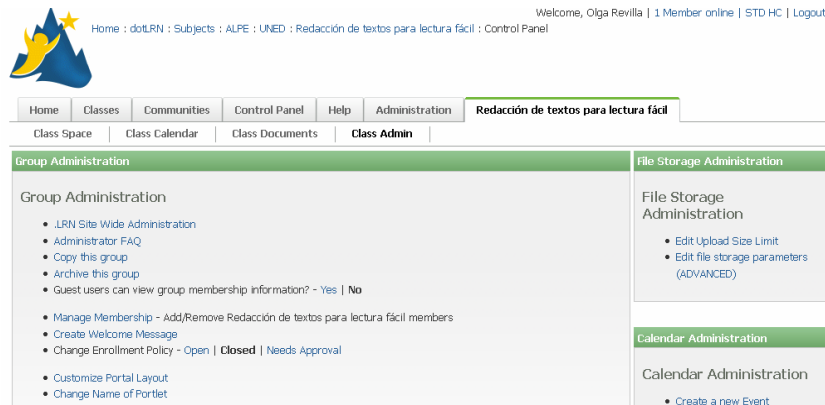

Fig. 2: Class administration level

- **Platform level:** only visible for platform administrators and allows to enroll users, create courses and configure the platform settings, among other functionality.
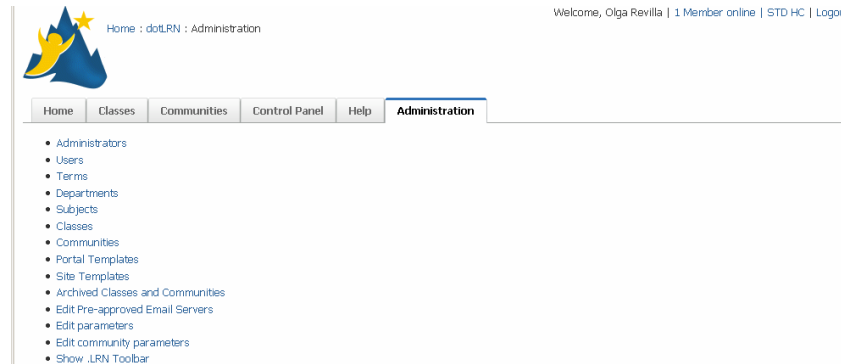

Fig. 3: Platform administration level

This paper presents the results of the analysis done at the class level (see Fig. 2) of the educational packages of dotLRN:
- Lors (SCORM, IMS-CP, IMS-MD) and
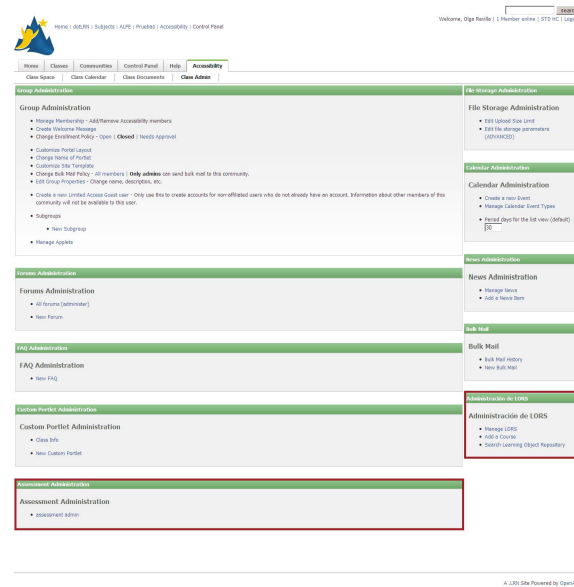- Assessment (IMS-QTI)

Fig. 4: Educational Packages analysed

These packages have been selected because they are traditionally used in the majority of courses. I have not analyzed the group administration or other packages because it would require a separate analysis

4 Methodology

The analysis presented is done on version dotLRN 2.3.1, with Zen theme, in the instance available for ALPE project (eTEN 029328)[5], a validation project involving an accessible, standard based e-learning solution for visually impaired, hearing impaired and adult learners that lack basic skills.

My analysis will follow the Web Content Accessibility Guidelines 1.0[6] published by the Web Accessibility Initiative (WAI)[7] of the World Wide Web Consortium (W3C)[8]. Only priority 1 and priority 2 guidelines has been considered. According to this, first an automatic validation has been carried out with an automatic validation tool and afterwards, complemented with a heuristic manual revision. The automatic validation tool used is *TAW*[9]. This manual validation has been done with 4 browsers (Internet Explorer 7, Internet Explorer 6, Firefox 2 and Opera 8) with and without javascript, and with the functionality for screen reader where it is required by the checkpoints. Moreover color analysis checkpoints have been checked by Contrast Analyser, Version 2.0[10]

5. Conclusions

As results shows, professors with disabilities will find some difficulties administrating online courses with dotLRN. The main areas are:
Priority 1 checkpoints

	LORS	Assesment
In General		
1.1 Provide a text equivalent for every non-text element	Passes	Passes
2.1 Ensure that all information conveyed with color is also available without color, for example from context or markup.	Passes	Passes

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[5] ALPE project: http://adenu.ia.uned.es/alpe/

[6] http://www.w3.org/TR/WAI-WEBCONTENT/

[7] http://www.w3.org/WAI/

[8] http://www.w3.org/

[9] www.tawdis.net Developed by the Spanish Ministry of Industry, Commerce and Tourism.

[10] http://www.paciellogroup.com/resources/contrast-analyser.html

	LORS	Assesment
4.1 Clearly identify changes in the natural language of a document's text and any text equivalents (e.g., captions).	N/A	N/A
6.1 Organize documents so they may be read without style sheets.	Passes	Passes
6.2 Ensure that equivalents for dynamic content are updated when the dynamic content changes.	N/A	N/A
7.1 Until user agents allow users to control flickering, avoid causing the screen to flicker.	Passes	Passes
14.1 Use the clearest and simplest language appropriate for a site's content.	For both of them, instructions are very poor.	
And if you use images and image maps		
1.2 Provide redundant text links for each active region of a server-side image map.	N/A	N/A
9.1 Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.	N/A	N/A
And if you use tables		
5.1 For data tables, identify row and column headers.	Passes	In imsqti-assess page there is a data table than don't follow the specification. In other tables, they pass.
5.2 For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.	N/A	N/A
And if you use frames		
12.1 Title each frame to facilitate frame identification and navigation.	N/A	N/A
And if you use applets and scripts		
6.3 Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.	For both, when javascript is not enabled, javascript based links fails, but they are located on the 'stylesheet changing form', outside of the scope of this analysis. So, my score is *Passes*	
And if you use multimedia		
1.3 Until user agents can automatically read aloud the text equivalent of a visual track, provide an auditory description of the important information of the visual track of a multimedia presentation.	N/A	N/A

	LORS	Assesment
1.4 For any time-based multimedia presentation (e.g., a movie or animation), synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation.	N/A	N/A
And if all else fails (Priority 1)		
11.4 If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.	N/A	N/A

Priority 2 checkpoints

	LORS	Assesment
In General		
2.2 Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen. [Priority 2 for images, Priority 3 for text].	Color contrast analysis depends on the colors used by the stylesheet. Zen theme passes this checkpoint.	
3.1 When an appropriate markup language exists, use markup rather than images to convey information.	N/A	N/A
3.2 Create documents that validate to published formal grammars.	Both of them fails in XHTML validation. Morover, dotlrn-toolbar.css and main.css also fails	
3.3 Use style sheets to control layout and presentation.	Passes	Passes
3.4 Use relative rather than absolute units in markup language attribute values and style sheet property values.	Passes	Passes
3.5 Use header elements to convey document structure and use them according to specification.	There are no headings to structure the pages	
3.6 Mark up lists and list items properly.	Passes	Passes
3.7 Mark up quotations. Do not use quotation markup for formatting effects such as indentation.	Sometimes there area blockquote tags for formatting effects	
6.5 Ensure that dynamic content is accessible or provide an alternative presentation or page.	N/A	N/A
7.2 Until user agents allow users to control blinking, avoid causing content to blink	Passes	Passes

	LORS	Assesment
7.4 Until user agents provide the ability to stop the refresh, do not create periodically auto-refreshing pages.	Passes	Passes
7.5 Until user agents provide the ability to stop auto-redirect, do not use markup to redirect pages automatically. Instead, configure the server to perform redirects.	Passes	Passes
10.1 Until user agents allow users to turn off spawned windows, do not cause pop-ups or other windows to appear and do not change the current window without informing the user.	Passes	Passes
11.1 Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported.	HTML 4.01 Transitional is used. My suggestion is making an effort to code in XHTML 1.1	
11.2 Avoid deprecated features of W3C technologies.	Both of them need their code to be cleaned, as there are many errors in the code.	
12.3 Divide large blocks of information into more manageable groups where natural and appropriate.	Passes	Passes
13.1 Clearly identify the target of each link.	Passes	Passes
13.2 Provide metadata to add semantic information to pages and sites.	Only keywords are provided, not description or a good title of the page	
13.3 Provide information about the general layout of a site (e.g., a site map or table of contents).	Fails	Fails
13.4 Use navigation mechanisms in a consistent manner.	There is a great lack of consistency in navigation, there are no titles, the layout of each page is different.	
And if you use tables (Priority 2)		
5.3 Do not use tables for layout unless the table makes sense when linearized. Otherwise, if the table does not make sense, provide an alternative equivalent (which may be a linearized version).	Some tables are used for layout	
5.4 If a table is used for layout, do not use any structural markup for the purpose of visual formatting.	Passes	Passes
And if you use frames (Priority 2)		
12.2 Describe the purpose of frames and how frames relate to each other if it is not obvious by frame titles alone.	N/A	N/A
And if you use forms (Priority 2)		

	LORS	Assesment
10.2 Until user agents support explicit associations between labels and form controls, for all form controls with implicitly associated labels, ensure that the label is properly positioned.	Passes	Passes
12.4 Associate labels explicitly with their controls.	Passes	Passes
And if you use applets and scripts (Priority 2)		
6.4 For scripts and applets, ensure that event handlers are input device-independent.	Passes	Passes
7.3 Until user agents allow users to freeze moving content, avoid movement in pages.	Passes	Passes
8.1 Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies [Priority 1 if functionality is important and not presented elsewhere, otherwise Priority 2.]	Passes	Passes
9.2 Ensure that any element that has its own interface can be operated in a device-independent manner.	Passes	Passes
9.3 For scripts, specify logical event handlers rather than device-dependent event handlers.	Passes	Passes

In my opinion and in this order, special effort should be made in :
- Clean up errors in code.
- Better structure of the pages, with headings and semantic tags.
- Consistency of the navigation
- Clear instructions of each option.
- Convert layout tables into divs, lists or other semantic elements.
- Providing meta information as descriptions and titles.

Professors with disabilities find great difficulties in developing their off-line job[11], but nowadays little research has been done about their on-line job. Moreover, many efforts have been made to improve the accessibility of the e-learning, but only for the students. This paper intends to be an invitation for the dotLRN open source developers community to attend the *backoffice* side of the e-learning: courses administration.

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[11] Abram, Suzanne: *The Americans with Disabilities Act in Higher Education: The Plight of Disabled Faculty*. Journal of Law & Education, v32 n1 p1-19. Jan 2003.