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台灣圖書館網頁標記語言正確性之探討

A Study on Markup Language Validations of Library Websites in Taiwan

謝 建 成 Jiann-Cherng Shieh*
Associate Professor
E-mail: jcshieh@ntnu.edu.tw

洪 范 文 Fan-Wen Hung
Graduate Student

陳 建 傑 Chien-Chieh Chen
Graduate Student

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謝建成*

副教授
國立台灣師範大學圖書資訊學研究所
E-mail: jcshieh@ntnu.edu.tw

洪范文

研究生
國立台灣師範大學圖書資訊學研究所

陳建傑

研究生
國立台灣師範大學圖書資訊學研究所

摘要

圖書館網站是圖書館服務的延伸，圖書館網頁之正確性與否必然關係著資訊倫理中之可及性及正確性，因此突顯出圖書館網頁是否符合網頁設計標準規範對讀者服務之重要性，而其中網頁標記語言為網頁設計標準規範的一種，透過圖書館網頁正確性檢測可清楚揭露網頁符合標準規範的程度，以協助圖書館開發或維護符合標準規範之網頁。本研究利用W3C所提供之網頁標記語言檢測服務（Markup Validation Service）檢測158所大專院校圖書館與24間公共圖書館網站首頁，藉以探討國內公共圖書館與大專院校圖書館網頁標記語言正確性之現況。結果發現大專院校圖書館與公共圖書館網站首頁標記語言正確性之檢測通過率為0，且錯誤數超過100個以上者有1/3強，顯示國內圖書館網頁標記語言之正確性亟待改善。本研究亦對於網頁檢測發生錯誤且W3C無修改建議之處，以範例方式提出解決之建議，供圖書館製作維護網頁之參考。

關鍵詞：網頁標記語言檢測，圖書館網站

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* 本文主要作者兼通訊作者。

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前　言

㈠背景介紹

由於數位時代的興起，人類對於電腦及網路的操作已逐漸成熟，在解決問題時也越來越依賴網路資源，網站已是資訊保存、提供及服務的主要媒介之一。圖書館亦不例外，國內大專院校圖書館網站建置率百分之百，圖書館網站儼然是圖書館服務的延伸，不論提供或推廣各項服務，皆可藉由圖書館網站達到其服務之目的，也因此網站已成為提供服務最基本的工具及窗口，也是圖書館用以弭平時空限制的一大利器。如此便利及快速的服務方式不僅拓展圖書館的服務範圍，更滿足了使用者的需求。

隨著開放軟體的盛行，網頁瀏覽器的選擇也趨於多元，據Market Share在2009年4月所做統計，目前市占率最高的瀏覽器是IE（Internet Explore）約佔66%，其次是Firefox約22%，第三名則為Safari約8.2%（Market Share, 2009）。然而各家瀏覽器執行與解釋網頁的方式都有些許不同，加上撰寫網頁的語言眾多，且許多市面上的網頁製作軟體均提供簡單易上手的方式，讓剛入門或對網頁語言不熟悉的使用者能輕易地製作出網頁，以致於衍生出不同軟體所產生的網頁未必能相容於各式各樣瀏覽器之窘境（Chen, Hong, & Shen, 2005）。

撰寫網頁的語言就如同人類的語言一般，必須遵守語法及詞彙的規範（如DTD）。網頁若能遵守規範，就能確保網頁架構與語法的正確性，亦將可滿足正確性及廣泛瀏覽的需求。對使用者而言，遵守規範的網頁能夠減少瀏覽的困難度，讓網頁適用於更多的載體（螢幕、瀏覽器、作業系統等），並減少錯誤訊息的傳遞；對網頁的管理者而言，符合規範的網頁較易維護，因工作團隊可能隨著時間不斷替換，對於新進人員而言則較易了解及修改。另外，符合規範的網頁也較能提供更彈性的客製化服務，增進網頁在網路上的能見度，提高搜尋引擎排名（Chen, Hong, & Shen, 2005；Max, 2004；The Web Standards Project, 2002；徐勤勤，2007）。網頁可分為三個部分：內容、外觀呈現及行為，各有其相關的標準規範，如內容規範有HTML、XHTML、XML等；外觀呈現規範則有CSS、XSL（extensible style sheet language）等；行為規範則有JavaScript、ECMAScript等（Chen & Shen, 2006）。符合規範的網頁將有助於提高瀏覽器的相容性；反之，正確性低的網頁不僅會降低傳輸速度與可及性（Chen & Shen, 2006），亦容易因不同的瀏覽器或版本差異導致資訊誤解或錯置的情況，甚至無法正常呈現，除容易傳達錯誤訊息，將影響使用者的印象及觀感，大大降低使用者的回流率。網頁管理者可藉由不同的檢測工具（validator或checker）檢視網頁是否符合規範，如網頁架構與語法的正確性可藉由W3C（World Wide Web Consortium）的網頁標記語言檢測器（markup validator）進行相關檢測。

現行的網頁製作並無強制性的規範，許多使用者在製作網頁時容易著重於外觀呈現，而忽略了網頁內容的一致性及相容性，若再搭配多元的網頁語言及瀏覽器，可能導致使用者無法正常地瀏覽網頁。例如，有些網頁會限制瀏覽器的類型及螢幕解析度，或網頁上隨意掛載大量的動畫內容如Flash等。有研究指出，目前通行的瀏覽器對網頁錯誤的容忍度很高，即使網頁包含錯誤也會嘗試執行（Breeding, 2006；Chen, Hong, & Shen, 2005），因此導致網路上充斥著不符合規範的網頁。Breeding於2006年針對美國研究圖書館協會（ARL）的123個會員圖書館網頁標記語言正確性進行調查，結果出其意料之外：除了21所圖書館完全符合W3C的規範，其餘皆有些許錯誤，其中100個錯誤數以上的圖書館甚至有7所，失敗率高達82%。另外，Breeding也針對大型都市的公共圖書館、商用ILS（整合型圖書館系統），以及商業網站（如Google、Amazon）等進行測試，結果與研究圖書館相去不遠，失敗率始終維持高比例。

圖書館網站既然是圖書館提供服務之延伸，基於維護資訊倫理（information ethics）精神之原則，圖書館網頁架構與語法正確性與否會直接影響圖書館服務之可及性（accessibility）與正確性（accuracy）。有鑑於此，本研究期望藉由W3C網頁標記語言檢測工具的應用，檢視台灣大專院校及公共圖書館網頁標記語言正確性（web markup language validation）程度及問題，並試圖提出解決方法，以供圖書館網站經營管理或建置發展之參考。

㈡研究目的與問題

基於上述之背景因素，本研究希望透過檢測圖書館網頁標記語言之正確性，了解台灣圖書館網頁建置現況，並提出修改之建議，以供圖書館網站建置及發展之參考。

具體之研究問題如下：

1. 台灣圖書館網頁標記語言的正確性程度為何？
2. 如何改善網頁標記語言的正確性？

二、網頁標記語言正確性檢測

㈠W3C網頁檢測工具

目前網頁正確性檢測工具主要有W3C（World Wide Web Consortium）、TAW3、WAVE、MAGENTA（ALPHA）、Bad neighborhood的Detect Headers、CSE HTML Validator Lite及WDG HTML Validator等，大多是遵守W3C的規範。其中WDG及W3C的Log Validator可一次檢測整個網站，但WDG的上限為一次100個網頁。

網頁正確性檢測是W3C Web Quality Tools（均為開放軟體open source）的

一部分，其所提供之網頁檢測包括MarkUp Validator、Feed Validator、CSS Validator、Link Checker、Log Validator等，可協助不同網頁需求規範之檢測。其中MarkUp Validator是用於檢測以HTML、XHTML、SMIL、MathML等電腦語言（computer language）所撰寫網頁其標記之正確性（markup validity）；Feed Validator是用於檢測Atom或RSS feed語法之正確性；CSS Validator是用於檢測內嵌於(X)HTML文件中CSS樣式表；Link Checker是用於尋找網頁中連結（link）、錨點（anchor）與參照物件（referenced object）之問題；Log Validator可協助網頁內容管理者發現並修復網站中最常被存取之不正確文件。

本研究所使用的檢測工具為W3C所提供的標記語言檢測器。其用法是透過檢查網頁語法，檢視網頁與其宣告之規範架構（如DTD）的符合程度，以評估該網頁的標記語言正確性。它可檢測出受測網頁的錯誤數（根據W3C所訂定規範）、伺服器種類、網頁大小、內文格式、編碼、文件類型等，並一一列出錯誤之處及建議改進的方式。使用方式除了可直接輸入網址外，也可將欲測之網頁檔上傳，或直接提供該網頁的原始碼，介面如圖1所示。檢測結果分成兩部分；一是結果摘要，敘述錯誤數、警告數、Encoding及Doctype為何版本等，如圖2所示：另一部分則為檢測出之錯誤或警告詳細結果，並列出改正建議如圖3所示。

圖1 W3CMarkup Validation Service
網頁檢測輸入介面

圖2 W3C Markup Validation Service
網頁檢測結果摘要

圖3　W3C Markup Validation Service
網頁檢測結果錯誤警告說明

㈡網頁檢測研究

Chen等人（2005）利用網頁檢測工具以了解網際網路上正確網頁的比例，並期望找出最常出現的錯誤類型。該研究網頁樣本採四種不同方式獲取：一是設計一個程式來隨機產生1100個網路主機的網址；二是從Alexa.com取得10000個最熱門網頁；三是隨機產生最多為八個字元的字串，並將這些字串輸入Google、Yahoo及Teoma三個搜尋引擎進行檢索，取前十名的檢索結果，共產生31540個網頁；四是兩個月後再以第一種方法取得1700個隨機網址；而網頁正確性檢測工具則採用W3C的Markup Validator及JTidy parser。

Chen等人的研究結果顯示，有高達95%的網頁不符合網頁標準，且不論使用何種網頁樣本蒐集方式，前十大錯誤種類幾乎完全一致。這十大錯誤類型有：缺少doctype定義，缺少屬性alt，缺少屬性type，使用不正確屬性height及width，URL中包含‘&’，body中有錯誤屬性，缺少引號標記，錯誤屬性“background”，錯誤屬性“border”，及“form”與“table”的錯誤使用。Chen等人認為，造成網頁不正確的原因主要是因瀏覽器過度容忍錯誤網頁、網頁製作軟體允許非HTML規範的功能或屬性，以及錯誤網頁不斷的複製流傳。

Breeding於2006年使用W3C的Markup Validation Service檢測美國研究圖書館協會的123個會員圖書館首頁，進行網頁正確性調查。該研究假設為：大部分的研究圖書館網站皆符合W3C所規範的網頁結構。然調查結果大出作者意料：除了21所圖書館完全符合W3C的規範，其餘皆有些許錯誤，甚至有7所圖書館錯誤數達100個以上，失敗率高達82%。另外，Breeding也針對大型

都市的公共圖書館（136所）、商用ILS（整合型圖書館系統）以及商業網站（如Google、Amazon）等進行測試，結果與研究圖書館相去不遠：Google有50個錯誤，eBay有248個錯誤，Yahoo有270個錯誤，CNN有68個錯誤，Flickr有15個錯誤，Amazon有1292個錯誤。

雖然現有許多圖書館網站運行的相當平順，然而Breeding相信就長遠實務而論，遵循網頁標準及正確HTML建構圖書館網頁，將有助於提昇圖書館網站之可信賴性與運作。

三、國內圖書館網頁標記語言正確性檢測實施

㈠圖書館樣本

1. 大專院校圖書館

本研究所採集的大專院校樣本為教育部所統計的「97學年度大專院校名錄」（不包括軍警學校），共163所大專院校圖書館，為避免性質差異，本研究將依據體系分別進行統計，分為三類：一般大學、師範體系，及技職院校。一般大學圖書館的有效樣本為60所，有2所無法檢測；師範體系圖書館的有效樣本為9所；技職院校圖書館的有效樣本為89所，有3所無法檢測。網頁取樣方式是以該校圖書館網頁首頁（main page）為對象，取樣日期為2009年5月4日。

2. 公共圖書館

公共圖書館的樣本名單是參考國立台中圖書館的全國公立公共圖書館統計表（2009），採用其中「國立圖書館」、「直轄市圖書館」及「縣市文化局圖書館」三大類圖書館。但由於各地區分館眾多，且有些分館的網頁屬於相同網頁架構（僅有分頁或內容不同），如台北市立圖書館各分館則僅採用總館的網頁。圖書館連結則是參考公共圖書館資訊服務網（2009）及國立中央圖書館台灣分館所列之公共圖書館連結（2009）。若該網頁有依年齡區分，如成人版與兒童版則以成人版為主；若有依語言區分，如中文版與英文版則選擇中文版；如圖書館隸屬當地文化局則選擇文化局網頁底下的圖書館分頁。選擇的圖書館有：國立圖書館總館2所、直轄市圖書館總館2所，以及縣市文化局圖書館24所，共28所。本研究有效樣本為24所，取樣日期為2009年5月4日（詳見附表一）。

㈡檢測實施

首先收集樣本網址，分兩部分：大專院校部分，從教育部統計處（2009）所統計的「97學年度大專院校名錄」取得各大專院校的名稱及學校圖書館網址；公共圖書館部分則由公共圖書館資訊服務網及國立中央圖書館台灣分館取得全國公共圖書館的網頁連結。由於考量首頁為網站連結必經之門，其網頁標記語法之正確性將影響使用者最多，因此本研究將檢測目標鎖定在圖書館網站之

首頁。接著進入各圖書館首頁，檢查是否為所欲檢測之頁面，接著在W3C的Markup Validation Service介面中輸入該網址，以記錄其檢測結果，並使用MS Excel加以統計分析。

四、檢測結果統計分析

㈠檢測結果統計分析

本研究將從網頁格式定義種類（Doctype）、網頁錯誤數及網頁錯誤類型進行分析，希望從中了解公共圖書館及大專院校圖書館網頁在標記語言上的問題，以提供網頁建置者參考。

1. 圖書館網頁格式定義種類

圖書館網頁格式定義類型方面，公共圖書館及師範體系圖書館網頁全數皆有定義，一般大學與技職院校圖書館則各有1所及2所沒有定義網頁的格式。在公共圖書館24個有效樣本中，包括7種定義標準，其中以HTML 4.01 Transitional為最大宗，佔53.6%；一般大學圖書館在60個有效樣本中，包含4種定義標準，以HTML 4.01 Transitional為最大宗，佔55.7%；師範體系圖書館在9個有效樣本中，包含2種定義標準，以XHTML 1.0 Transitional為最大宗，佔77.8%；技職院校圖書館在89個有效樣本中，包含了6種定義標準，以HTML 4.01 Transitional為最大宗，佔63.7%。從上述結果可發現不論公共圖書館或大專院校圖書館，其網頁格式定義皆為一種以上，網頁格式若未加以定義或無法統一，除了在內容呈現上可能出現錯誤，在資料交換及傳輸時可能也會出現問題，影響所及除造成資料的流失，有時甚至導致錯誤訊息的傳遞。

表1　公共圖書館網頁Doctype種類表

Doctype種類	館數	%
(no Doctype found)	0	0.0
XHTML 1.0 Frameset	0	0.0
HTMHTML 3.2	1	3.6
HTML 4.01 Strict	1	3.6
XHTML 1.0 Strict	1	3.6
HTML 4.0 Transitional	3	10.7
XHTML 1.0 Transitional	3	10.7
HTML 4.01 Transitional	15	53.6
加　總	24	100.0

表2 一般大學圖書館網頁Doctype種類表

Doctype種類	館數	%
HTML 4.0 Transitional	1	1.6
HTML 4.01 Frameset	3	4.9
XHTML 1.0 Transitional	22	36.1
HTML 4.01 Transitional	34	55.7
加 總	60	100.0

表3 師範體系圖書館網頁Doctype種類表

Doctype種類	館數	%
HTML 4.01 Transitional	2	22.2
XHTML 1.0 Transitional	7	77.8
加 總	9	100.0

表4 技職院校圖書館網頁Doctype種類表

Doctype種類	館數	%
XHTML 1.0 Frameset	1	1.1
HTML 4.01 Strict	2	2.2
XHTML 1.0 Strict	2	2.2
HTML 4.0 Transitional	5	5.5
XHTML 1.0 Transitional	21	23.1
HTML 4.01 Transitional	58	63.7
加 總	89	100.0

2. 圖書館網頁錯誤數

從Markup Validator檢測結果發現，不論大專院校圖書館或公共圖書館，都與Breeding（2006）所作的結果相差不遠，台灣圖書館網頁標記語言正確性普遍不甚理想。首先，大專院校及公共圖書館網頁的合格率皆為0，網頁改善努力的空間頗大。另外，在錯誤數方面，錯誤數10個以下的公共圖書館僅佔7.1%（2所），而100個以上的卻佔32.1%（9所）；大專院校圖書館方面，錯誤數在10個以下的僅有9.2%（15所），其中一般大學有7所，技職院校有8所；而錯誤數在100個以上的佔27.6%（一般大學18所、技職院校25所，共43所）。兩者皆有約1/3的網頁錯誤數超過100（詳見表5至表8）。

另外，在錯誤數排行方面，一般大學圖書館最多為A館，有863個錯誤；最少為B館，僅2個錯誤。師範體系圖書館最多為C館，有197個錯誤；最少為D館，僅11個錯誤。技職院校圖書館最多為E館，有1204個錯誤；最少為F館，僅1個錯誤。公共圖書館錯誤數最高為Z館204個，最少為Y館3個。從錯誤數排行可看出，圖書館在網頁標記語言的正確性程度差異頗大。

在全部樣本中，公共圖書館有7所無法被偵測，有些是因無法連結（可能是DNS的問題），如連江縣政府文化局、新竹市文化局圖書館，及高雄市政府

文化局文化中心圖書館；有些則是字元編碼錯誤或w3c檢測器不支援該編碼，如國立中央圖書館台灣分館。大專院校部分，無法連結的有5所，分別是東海大學、國立台灣藝術大學、仁德醫護管理專校、華夏技術學院及高美醫護管理專校；其中東海大學的原因為字元編碼錯誤或w3c檢測器不支援該編碼，其餘4所可能是DNS的問題。

表5　公共圖書館網頁錯誤數

錯誤數	館數	%
1~10	2	7.1
11~20	4	14.3
21~30	2	7.1
31~40	2	7.1
41~50	0	0.0
51~60	2	7.1
61~70	0	0.0
71~80	2	7.1
81~90	0	0.0
91~100	1	3.6
100以上	9	32.1
無法偵測	4	14.3
Total	28	100.0

表6　一般大學圖書館網頁錯誤數

錯誤數	館數	%
1~10	7	11.3
11~20	5	8.1
21~30	5	8.1
31~40	3	4.8
41~50	5	8.1
51~60	2	3.2
61~70	4	6.5
71~80	3	4.8
81~90	2	3.2
91~100	6	9.7
100以上	18	29.0
無法偵測	2	3.2
Total	62	100.0

表7 師範體系圖書館網頁錯誤數

錯誤數	館數	%
1~10	0	0.0
11~20	3	27.3
21~30	2	18.2
31~40	0	0.0
41~50	4	36.4
51~60	0	0.0
61~70	0	0.0
71~80	0	0.0
81~90	0	0.0
91~100	0	0.0
100以上	0	0.0
無法偵測	0	0.0
Total	9	100.0

表8 技職院校圖書館網頁錯誤數

錯誤數	館數	%
1~10	8	8.7
11~20	10	10.9
21~30	12	13.0
31~40	4	4.3
41~50	6	6.5
51~60	9	9.8
61~70	5	5.4
71~80	6	6.5
81~90	2	2.2
91~100	2	2.2
100以上	25	27.2
無法偵測	3	3.3
Total	92	100.0

3. 圖書館網頁錯誤類型

W3C Markup Validation Service所定義之錯誤類型總共有447種（可參考http://validator.w3.org/docs/errors.html#noverbose），而本研究之公共圖書館及大專院校圖書館所出現之錯誤類別皆不超過50種（公共圖書館39種，大專院校圖書館48種），顯示錯誤的情形尚在可接受的範圍內。惟不論大專院校圖書館或公共圖書館，網頁出錯的前三項原因皆為屬性使用錯誤或未加以定義。公共圖書館的前三項錯誤項目分別是There is no attribute X（32次）、Document type does not allow element X here（27次）及Element X undefined（24次）。大專院校圖書館的前三項錯誤項目為There is no attribute X（138次）、Required attribute X not specified（123次）及Element X undefined（88次）；其中一般大學、師範體系

及技職院校圖書館錯誤類別最高者皆為There is no attribute X，各有54次、8次及76次。屬性定義有誤在資訊的顯示上或許不會造成太大誤差，但對於資料的交換及傳遞會有一定程度地影響（其餘資料詳見附表2至6）。

此外，本研究將上述公共圖書館與大專院校圖書館網站首頁所有出現的錯誤項目依據網頁撰寫語言分為六大類。在上述共48個錯誤類型中，屬於Html-Tag錯誤者最多（35個），顯示這些網頁有絕大多數為Html標籤的定義或使用錯誤，在撰寫Html語法時應注意標籤的正確使用性。另外，由於網頁製作軟體愈趨普及，降低入門使用者運用視覺化及動態效果的門檻，導致Script/Script-Tag出錯的數量也偏高（17個）（其餘結果詳見附表7）。

㈡檢測錯誤格式修正

W3C Markup Validator針對檢測之網頁標記語法錯誤提供些許修改建議，但在本研究檢測出的48種錯誤類型中，有20種錯誤在W3C規範中並未給予明確定義，亦未有建議修正之方法，因此本研究嘗試從這20種類別中各挑選一個錯誤案例加以修改，希望提供網頁建置者修改網頁錯誤之參考。

修改之錯誤大多為網頁語法及結構上的誤用。在語法方面，若出現錯誤類型「An attribute value specification must be an attribute value literal unless SHORTTAG YES is specified」時，可嘗試檢查錯誤處之屬性值，確定各屬性值的前後有雙引號；若出現「X not finished but containing element ended」此錯誤類別，則可檢查是否缺少結束標籤。另外，在網頁結構方面，如檢測結果為「Start tag for X omitted, but its declaration does not permit this」，則可檢查標籤的位置及階層是否正確（其餘修改結果詳見附表8）。

五、結　論

本研究利用W3C Markup Validator檢測工具探討大專院校圖書館及公共圖書館首頁之標記語言正確性，透過網頁格式定義（Doctype）種類、網頁錯誤數及網頁錯誤種類三項指標，希望了解圖書館網頁標記語言的正確性程度及問題所在，並提出網頁錯誤之修正建議，以供網頁建置人員參考。

在網頁格式定義方面，不論公共圖書館或大專院校圖書館皆擁有一種以上的Doctype，最多甚至高達7種（公共圖書館），不同的網頁格式定義有可能導致資訊呈現上的差異，甚至造成資訊錯置或遺失。另外，一般大學圖書館、技職院校圖書館及公共圖書館網頁多數皆使用「HTML 4.01 Transitional」格式定義，或可作為網頁製作後進之參考。

在錯誤率方面，大專院校圖書館158個有效樣本與公共圖書館24個有效樣本中，大專院校圖書館與公共圖書館網站首頁標記語言之正確性檢測通過率為

0，且兩者皆有1/3以上錯誤數超過100個，錯誤率明顯偏高。而相較於一般大學與技職院校圖書館的高錯誤率，師範體系學校圖書館網頁的錯誤數較少，也未見錯誤數達100以上者。若從最多及最少錯誤數的差距來看，公共圖書館相差201個，一般大學圖書館相差861個，師範體系圖書館相差186個，技職院校圖書館相差最多，有1203個錯誤。從錯誤數排行可看出，圖書館在網頁標記語言的正確性程度差異頗大。

在錯誤類型方面，最常出現的錯誤類型為「使用錯誤或未定義的屬性（attribute）」，顯示在建置圖書館網頁時，須特別注意屬性的使用。另外，本研究將48個錯誤類型依照網頁撰寫語言分為六大類，其中屬於Html-Tag錯誤者最多（35個），顯示這些網頁有絕大多數為Html標籤的定義或使用錯誤，在撰寫Html語法時應注意標籤的正確使用方式。

本研究嘗試修改W3C未給予明確定義之20種錯誤類型，從中各挑選一個錯誤案例加以示範修正，希望提供網頁建置者修改網頁錯誤之參考。修改結果發現大多為網頁語法與標籤結構的錯誤。在語法方面，以結束標籤的錯誤率最高，例如：<tr>以</tr>結尾且<td></td>須包含於<tr>之中，但位置放置錯誤。在某些瀏覽器如IE也許會自動修正誤用之標籤，但並不能保證所有瀏覽器都可正常瀏覽。再者，有些網頁的表格因只使用一列，則省去<tr>直接以<td>呈現，此即不符合網頁撰寫語言之規範。

除了語法上的錯誤，網頁結構也容易出現若干錯誤，例如<html>、<head>與<body>三者有規範順序及位置，<head>包含於<body>中即不符合規範，如此可能造成資訊呈現上的問題。此外，若出現「Cannot continue because of previous errors」錯誤訊息，則可檢查該行錯誤之前的網頁語法是否有誤，抑或前段的錯誤是否已修改。上述之語法及結構錯誤，對於資料交換及傳遞將產生一定程度的影響，並降低資訊的可及性。

由於網頁格式定義未統一，及偏高的錯誤率，圖書館網頁標記語言正確性有相當大的改善空間。造成圖書館網頁標記語言正確性低的原因，除了可能是網頁製作人員不熟悉網頁語法，網頁製作軟體無嚴格規範使用者使用各物件及功能也是導致網頁語法錯誤的因素之一。

圖書館網站是圖書館提供全天候服務重要平台，網站內所有網頁均代表圖書館延伸服務的標的，因此圖書館整體網站正確性檢測就如同對圖書館整體作業的檢測，圖書館應將圖書館網站正確性之檢測視為圖書館管理業務之一，而網站正確性與讀者對圖書館服務滿意度是否存在關連性，亦有必要進一步深入探討，以做為圖書館經營管理決策之參考。

然而正當我們如火如荼地引進新資訊技術於圖書館應用之際，圖書館應更積極維護現有圖書館網頁，使其符合標準規範以確保其正確性，因此圖書館實施網頁檢測是必然需要的。

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附表1 公共圖書館樣本名稱及所在地區

館名	地區
台中市文化局	台中市
台中縣立文化中心	台中縣
台北市立圖書館	台北市
台北縣立圖書館	台北縣
台東縣政府文化暨觀光處	台東縣
台南市立圖書館	台南市
宜蘭縣政府文化局公共圖書館	宜蘭縣
花蓮縣文化局公共圖書館	花蓮縣
金門縣文化局	金門縣
南投縣政府文化局圖書課	南投縣
屏東縣政府文化局圖書館	屏東縣
苗栗縣政府國際文化觀光局	苗栗縣
桃園縣政府文化局圖書館	桃園縣
高雄市立圖書館	高雄市
高雄市政府文化局文化中心圖書館	高雄市
高雄縣政府文化局(公共圖書館)	高雄縣
國立中央圖書館台灣分館	台北縣
國立台中圖書館	台中市
基隆市文化局圖書館	基隆市
連江縣政府文化局	連江縣
雲林縣政府文化處公共圖書館	雲林縣
新竹市文化局圖書館	新竹市
新竹縣文化局圖書館	新竹縣
嘉義市政府文化局圖書館	嘉義市
嘉義縣政府文化處(圖書館服務網)	嘉義縣
彰化縣文化局	彰化縣
臺南縣政府文化局圖書館	台南縣
澎湖縣文化局	澎湖縣

附註1： 臺東市、金門縣金城鎮、連江縣南竿鄉、澎湖縣馬公市等四地因設有縣文化局圖書館，目前不建館，因此無獨立之圖書館網頁。
附註2： 高雄市政府文化局文化中心圖書館於本表列入高雄市之縣市文化局圖書館。
附註3： 台中縣文化局本身沒有成立圖書館，本表將台中縣立文化中心列屬台中縣文化局之圖書館。
資料來源：本研究整理

附表2　公共圖書館網頁錯誤名稱種類表

錯誤名稱	出現次數
an attribute value literal can occur in an attribute specification list only after a VI delimiter	1
literal is missing closing delimiter	1
no document type declaration; will parse without validation	1
non SGML character number X	1
NET-enabling start-tag not immediately followed by null end-tag	1
start tag for X omitted, but its declaration does not permit this	1
unknown declaration type X	1
value of attribute Y invalid: X cannot start a name	1
value of fixed attribute X not equal to default	1
X invalid: only S separators and TAGC allowed here	1
X is not a reserved name	1
character X is not allowed in the value of attribute Y	2
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	4
duplicate specification of attribute X	4
ID X already defined	4
invalid comment declaration: found X outside comment but inside comment declaration	4
invalid comment declaration: found character X outside comment but inside comment declaration	4
X declaration not allowed in instance	4
X not finished but containing element ended	4
an attribute specification must start with a name or name token	5
character X not allowed in attribute specification list	6
end tag for X omitted, but OMITTAG NO was specified	6
X is not a member of a group specified for any attribute	6
XML Parsing Error	6
document type does not allow element X here; assuming missing Y start-tag	7
an attribute value must be a literal unless it contains only name characters	8
character data is not allowed here	9
document type does not allow element X here; missing one of Y start-tag	9
no document type declaration; implying X	10
value of attribute Y cannot be X; must be one of %3	10
end tag for X omitted, but its declaration does not permit this	13
end tag for X which is not finished	14
reference to entity X for which no system identifier could be generated	17
end tag for element X which is not open	18
general entity X not defined and no default entity	18
required attribute X not specified	19
element X undefined	24
document type does not allow element X here	27
there is no attribute X	32

附表3 大專院校網頁錯誤名稱種類表

錯誤名稱	出現次數
cannot continue because of previous errors	1
character X invalid: only Y and parameter separators allowed	1
literal is missing closing delimiter	1
marked section end not in marked section declaration	1
Missing xmlns attribute for element X. The value should be: Y	1
no document element	2
value of fixed attribute X not equal to default	3
character X is not allowed in the value of attribute Y	4
NET-enabling start-tag not immediately followed by null end-tag	4
start tag for X omitted, but its declaration does not permit this	4
an attribute value specification must start with a literal or a name character	5
unknown declaration type X	5
X not finished but document ended	6
the name and VI delimiter can be omitted from an attribute specification only if SHORTTAG YES is specified	6
value of attribute X must be a single token	6
no document type declaration; will parse without validation	7
an attribute value literal can occur in an attribute specification list only after a VI delimiter	8
invalid comment declaration: found character X outside comment but inside comment declaration	8
X invalid: only S separators and TAGC allowed here	8
invalid comment declaration: found X outside comment but inside comment declaration	9
syntax of attribute value does not conform to declared value	9
duplicate specification of attribute X	11
an attribute specification must start with a name or name token	14
character X not allowed in attribute specification list	14
X is not a member of a group specified for any attribute	15
character data is not allowed here	20
document type does not allow element X here; assuming missing Y start-tag	22
value of attribute Y invalid: X cannot start a name	24
ID X already defined	25
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	31
XML Parsing Error	31
value of attribute Y cannot be X; must be one of %3	35
end tag for X omitted, but OMITTAG NO was specified	37
end tag for X omitted, but its declaration does not permit this	38
end tag for X which is not finished	40
document type does not allow element X here; missing one of Y start-tag	44
an attribute value must be a literal unless it contains only name characters	45
X not finished but containing element ended	45
no document type declaration; implying X	60
end tag for element X which is not open	80
general entity X not defined and no default entity	84
reference to entity X for which no system identifier could be generated	84
document type does not allow element X here	87
element X undefined	88
required attribute X not specified	123
there is no attribute X	138

附表4　一般大學圖書館網頁錯誤名稱種類表

錯誤類型	館數
an attribute value specification must start with a literal or a name character	1
literal is missing closing delimiter	1
Missing xmlns attribute for element X. The value should be: Y	1
no document element	1
NET-enabling start-tag not immediately followed by null end-tag	1
the name and VI delimiter can be omitted from an attribute specification only if SHORTTAG YES is specified	1
unknown declaration type X	1
value of fixed attribute X not equal to default	1
character X is not allowed in the value of attribute Y	2
start tag for X omitted, but its declaration does not permit this	2
syntax of attribute value does not conform to declared value	2
X not finished but document ended	2
an attribute value literal can occur in an attribute specification list only after a VI delimiter	3
invalid comment declaration: found X outside comment but inside comment declaration	3
invalid comment declaration: found character X outside comment but inside comment declaration	3
value of attribute X must be a single token	3
X invalid: only S separators and TAGC allowed here	3
an attribute specification must start with a name or name token	4
no document type declaration; will parse without validation	4
character X not allowed in attribute specification list	6
duplicate specification of attribute X	6
X is not a member of a group specified for any attribute	8
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	10
character data is not allowed here	10
document type does not allow element X here; assuming missing Y start-tag	10
end tag for X which is not finished	12
value of attribute Y cannot be X; must be one of %3	12
ID X already defined	13
value of attribute Y invalid: X cannot start a name	13
XML Parsing Error	15
end tag for X omitted, but OMITTAG NO was specified	16
an attribute value must be a literal unless it contains only name characters	17
end tag for X omitted, but its declaration does not permit this	17
X not finished but containing element ended	17
document type does not allow element X here; missing one of Y start-tag	19
no document type declaration; implying X	19
document type does not allow element X here	31
end tag for element X which is not open	34
element X undefined	35
general entity X not defined and no default entity	38
reference to entity X for which no system identifier could be generated	38
required attribute X not specified	47
there is no attribute X	54

附表5 師範體系圖書館網頁錯誤名稱種類表

錯誤類型	館數
an attribute value must be a literal unless it contains only name characters	1
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	1
document type does not allow element X here; missing one of Y start-tag	1
document type does not allow element X here; assuming missing Y start-tag	1
duplicate specification of attribute X	1
end tag for X omitted, but OMITTAG NO was specified	1
end tag for X which is not finished	1
ID X already defined	1
invalid comment declaration: found character X outside comment but inside comment declaration	1
no document type declaration; will parse without validation	1
value of attribute X must be a single token	1
value of attribute Y invalid: X cannot start a name	1
X is not a member of a group specified for any attribute	1
X not finished but containing element ended	1
X invalid: only S separators and TAGC allowed here	1
character data is not allowed here	2
end tag for X omitted, but its declaration does not permit this	2
value of attribute Y cannot be X; must be one of %3	2
XML Parsing Error	2
element X undefined	3
document type does not allow element X here	4
end tag for element X which is not open	5
general entity X not defined and no default entity	5
no document type declaration; implying X	5
reference to entity X for which no system identifier could be generated	5
required attribute X not specified	8
there is no attribute X	8

附表6　技職院校圖書館網頁錯誤名稱種類表

錯誤類型	館數
cannot continue because of previous errors	1
character X invalid: only Y and parameter separators allowed	1
marked section end not in marked section declaration	1
no document element	1
character X is not allowed in the value of attribute Y	2
no document type declaration; will parse without validation	2
start tag for X omitted, but its declaration does not permit this	2
value of attribute X must be a single token	2
value of fixed attribute X not equal to default	2
NET-enabling start-tag not immediately followed by null end-tag	3
an attribute value specification must start with a literal or a name character	4
duplicate specification of attribute X	4
invalid comment declaration: found character X outside comment but inside comment declaration	4
unknown declaration type X	4
X invalid: only S separators and TAGC allowed here	4
X not finished but document ended	4
an attribute value literal can occur in an attribute specification list only after a VI delimiter	5
the name and VI delimiter can be omitted from an attribute specification only if SHORTTAG YES is specified	5
invalid comment declaration: found X outside comment but inside comment declaration	6
X is not a member of a group specified for any attribute	6
syntax of attribute value does not conform to declared value	7
character data is not allowed here	8
character X not allowed in attribute specification list	8
an attribute specification must start with a name or name token	10
value of attribute Y invalid: X cannot start a name	10
document type does not allow element X here; assuming missing Y start-tag	11
ID X already defined	11
XML Parsing Error	14
end tag for X omitted, but its declaration does not permit this	19
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	20
end tag for X omitted, but OMITTAG NO was specified	20
value of attribute Y cannot be X; must be one of %3	21
document type does not allow element X here; missing one of Y start-tag	24
an attribute value must be a literal unless it contains only name characters	27
end tag for X which is not finished	27
X not finished but containing element ended	27
no document type declaration; implying X	36
end tag for element X which is not open	41
general entity X not defined and no default entity	41
reference to entity X for which no system identifier could be generated	41
element X undefined	50
document type does not allow element X here	52
required attribute X not specified	68
there is no attribute X	76

附表7 錯誤項目類別表

錯誤類型	網頁撰寫語言					
	Html	Html-DTD	Html-Tag	Script / Script-Tag	XML	SGML
XML Parsing Error					○	
X invalid: only S separators and TAGC allowed here						
X is not a function name				○		
end tag for element X which is not open		○	○	○		
X is not a member of a group specified for any attribute				○		
X not finished but document ended	○		○	○	○	
X not finished but containing element ended		○	○	○		
X declaration not allowed in instance		○	○			
end tag for X which is not finished			○	○	○	
ID X already defined	○	○				
character X is not allowed in the value of attribute Y		○				
an attribute value must be a literal unless it contains only name characters	○	○				
general entity X not defined and no default entity	○	○	○			
invalid comment declaration: found X outside comment but inside comment declaration	○	○	○			
invalid comment declaration: found character X outside comment but inside comment declaration	○	○	○			
element X undefined			○	○		
document type does not allow element X here	○					
document type does not allow element X here; assuming missing Y start-tag	○	○				
document type does not allow element X here; missing one of Y start-tag	○	○				
unknown declaration type X			○	○		
required attribute X not specified			○	○		
character data is not allowed here						
an attribute value literal can occur in an attribute specification list only after a VI delimiter		○				
cannot continue because of previous errors			○			
character X invalid: only Y and parameter separators allowed						

（續前）

錯誤類型	網頁撰寫語言					
	Html	Html-DTD	Html-Tag	Script / Script-Tag	XML	SGML
character X not allowed in attribute specification list						
there is no attribute X	○	○				
no document element		○				
no document type declaration; implying X		○				
no document type declaration; will parse without validation	○					
reference to entity X for which no system identifier could be generated	○					
non SGML character number X						○
end tag for X omitted, but its declaration does not permit this		○				
end tag for X omitted, but OMITTAG NO was specified			○			
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified						
duplicate specification of attribute X			○			
value of fixed attribute X not equal to default	○	○				
literal is missing closing delimiter			○	○		
marked section end not in marked section declaration	○	○	○			
NET-enabling start-tag not immediately followed by null end-tag			○	○		
the name and VI delimiter can be omitted from an attribute specification only if SHORTTAG YES is specified	○	○				
Missing xmlns attribute for element X. The value should be: Y	○	○				
start tag for X omitted, but its declaration does not permit this	○	○				
value of attribute Y invalid: X cannot start a name	○	○				
value of attribute Y cannot be X; must be one of %3	○	○				
an attribute specification must start with a name or name token	○	○				
an attribute value specification must start with a literal or a name character	○	○				
syntax of attribute value does not conform to declared value		○				
value of attribute X must be a single token	○	○				
加　總	2	7	35	17	5	1

註：○代表該錯誤項目屬於此種類型

附表8 錯誤項目及修改方式

錯誤類別	錯誤項目舉例	可修改方式
an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified	Line 41, column 28: an attribute value specification must be an attribute value literal unless SHORTTAG YES is specified <td><DIV class=newsmodule id=newstxt>	將屬性值加上雙引號"
an attribute value specification must start with a literal or a name character	Line 372, column 56: an attribute value specification must start with a literal or a name character 97學年度第四次長期逾期同學名單(30天以上) 	移除color=
cannot continue because of previous errors	Line 2, column 63: cannot continue because of previous errors … HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">	將全形>改為半形
character X invalid: only Y and parameter separators allowed	Line 2, column 63: character ">" invalid: only delimiter ">", delimiter "[", system identifier, "CDATA", "NDATA", "SDATA" and parameter separators allowed … HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">	將全形>改為半形
character X not allowed in attribute specification list	Line 427, column 159: character ")" not allowed in attribute specification list …0" marginheight="0" onLoad="start()")>	將onLoad= "start()")>改為 onLoad="start()"
document type does not allow element X here	Line 24, column 49: document type does not allow element "BR" here …DC.Date" content=1970-01-01 8:00> <meta http-equiv="Content-Type" content=•Line 44, column 45: document type does not allow element "META" here …me="DC.Date" content=1970-01-01 8:00> <table summary="排版用表格" width="100%" bord	移除
document type does not allow element X here; assuming missing Y start-tag	Line 39, column 68: document type does not allow element "script" here; assuming missing "body" start-tag… s/AC_RunActiveContent.js" type="text/javascript"></script>•Line 235, column 42: document type does not allow element "tr" here; assuming missing "table" start-tag	將</head>移至<body>之前一行
invalid comment declaration: found X outside comment but inside comment declaration	Line 119, column 69: invalid comment declaration: found name character outside comment but inside comment declaration …" size="40" maxlength="40" value="---請輸入查詢詞---" accesskey="s" onfocus="clearT	將"---請輸入查詢詞---"改為"請輸入查詢詞"
marked section end not in marked section declaration	Line 335, column 4: marked section end not in marked section declaration //]]>	改為//]> 或移除//]]>
Missing xmlns attribute for element X. The value should be: Y	Many Document Types based on XML need a mandatory xmlns="" on the root element. For example, the root element for XHTML will look like: <html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">	加入<html xmlns="http://www.w3.org/1999/xhtml">

（續前）

錯誤類別	錯誤項目舉例	可修改方式
no document element	Line 821, column 8: no document element </HT…	移除</HTML>之後的空白
start tag for X omitted, but its declaration does not permit this	Line 82, column 24: start tag for "TR" omitted, but its declaration does not permit this <table width=90%><td>	<td>前加入<tr>並在適當位置加入</tr>
value of attribute Y cannot be X; must be one of %3	Line 167, column 268: value of attribute "ALIGN" cannot be "ABSMIDDLE"; must be one of "TOP", "MIDDLE", "BOTTOM", "LEFT", "RIGHT" …ght="11" border="0" align="absmiddle" /></td> align="absmiddle"></td>	align="absmiddle"改為規範用法或改為top, middle, right等
value of fixed attribute X not equal to default	Line 5, column 39: value of fixed attribute "xmlns" not equal to default xmlns="http://www.w3.org/TR/REC-html40">	將xmlns= "http://www.w3.org/TR/REC-html40">改為預設xmlns= "http://www.w3.org/1999/xhtml"
X declaration not allowed in instance	Line 3, column 3: "DOCTYPE" declaration not allowed in instance <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">	將<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">移至頁首
X invalid: only S separators and TAGC allowed here	Line 256, column 23: delimiter """ invalid: only S separators and TAGC allowed here document.write ("</mar"+"quee>")	改為document.write ("</marquee>")
X is not a member of a group specified for any attribute	Line 180, column 258: "a" is not a member of a group specified for any attribute … 0,height=300,left=150,top=120') " a href=# onkeypress="window.open('readnews')	移除多餘的a href=#
X not finished but containing element ended	Line 261, column 5: "HEAD" not finished but containing element ended	將<head>結尾補上</head>
X not finished but document ended	Line 297, column 8: "HTML" not finished but document ended </ht…	<body>之前加入<html>
XML Parsing Error	Line 385, column > 80: XML Parsing Error: AttValue: " or ' expected …vascript" src="http://www.dns.com.tw/pagerank-checker/display/pr1.js"> </scri…Line 385, column > 80: XML Parsing Error: attributes construct error …vascript"	"=" 之後的屬性值前後加上引號

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A Study on Markup Language Validations of Library Websites in Taiwan

Jiann-Cherng Shieh*

Associate Professor
E-mail: jcshieh@ntnu.edu.tw

Fan-Wen Hung

Graduate Student

Chien-Chieh Chen

Graduate Student
Graduate Institute of Library & Information Studies
National Taiwan Normal University
Taipei, Taiwan

Abstract

Library website is an extended service of library; the correctness of library webpage is certainly related to accessibility and correctness of information ethics and also will manifest the importance of the compliance of library webpage with webpage design standard for the general readers. Markup validation service is one of the webpage design standards. Testing the correctness of library webpage can reveal the extent of the compliance of webpage with the standard in order to assist libraries to develop or maintain webpage conforming to the standard. This study used markup validation service provided by W3C to test the correctness of the codes of library homepage of 158 colleges and 24 public libraries in order to investigate the current status of the correctness of the markup language of university and public library websites. The results showed that 0% of the markup language of university and public library websites passed the test; more than 1/3 of the tested library websites had over 100 errors. This indicated that the webpage designers and the validation mechanism of the libraries being investigated need improvement. For the errors found in the webpage testing, which W3C provided no suggestion for amendment, this study offered some solutions by giving examples to serves as references for producing and maintaining library websites.

Keywords: *W3C; Web markup language validation; Library website*

SUMMARY

Introduction

Library website is an extended service which solves the limitation problem of space and distance. However, not all webpage is suitable for different kinds of browsers even if there are diverse webpage producing software and browsers on

* Principal author for all correspondence.

the market nowadays. The compliance of library webpage with webpage design standard is positively related to the accessibility and correctness of information, which would also makes it easer for website maintenance. Web administrators can use various validating tools, such as the markup validator of W3C (World Wide Web Consortium), for web design and correctness. The study used the markup validator of W3C to test the correctness and investigate the problems of the web markup language validation of university and public libraries in Taiwan, and tried to propose some solutions as reference for library website management and development.

Related Literature

Chen, Hong, and Shen (2005) used a number of validating tools to examine the proportion of correct webpage on the Internet and identified the most frequently occurring types of errors. The sample websites of the study were chosen by four different ways: First, designed a program to randomly generate 1,100 websites from different web hosts; second, chose 10,000 most popular webpage from Alexa.com; third, randomly generated up to eight character strings using three search engines (i.e., Google, Yahoo, and Teoma) to search for the results and choosing the top ten results; 31,540 pages were produced this way; forth, used the first method two month later to obtain 1,700 random websites. The researchers used the Markup Validator of W3C and JTidy parser as the validating tools.

The research results of Chen et. al. (2005) showed that up to 95% of the sample pages did not comply with the web standards, and the top ten error types were almost the same regardless of their different collecting ways. Chen et. al. (2005) concluded that those errors of webpage were mainly caused by the excessive tolerance to error webpage of the browsers, the allowance of non-HTML functions and features by the software of website design, as well as continuous duplication and spread of the error pages.

Breeding in 2006 used W3C's Markup Validation Service to validate the homepage of the 123 members of the United States Association of Research Libraries (ARL) for their markup correctness. The results showed that only 21 libraries fully complied with W3C's validation, the rest presented some errors, and there were even seven libraries presented more than 100 errors. The proportion of inaccuracy was as high as 82%. In addition, Breeding also tested 136 metropolitan public libraries, the business Integrated Library System (ILS), as well as some commercial websites (such as Google, Amazon), and the results were almost equal.

Research Questions

Based on the background of the problem mentioned above, the study hoped to investigate the current status of the correctness on the markup language of library websites in Taiwan, to propose some suggestions for amendment, and to serve as a reference for the library website development.

The specific research questions are as follows:

1. What is the proportion of the accurate web markup language on library websites in Taiwan?
2. How to improve the accuracy of web markup languages?

Methodology

This study used the markup validation service provided by W3C (Markup Validator) to test the correctness of the web markup languages. Through checking the codes of the webpage, the Markup Validator examines the websites and the normative framework (e.g., DTD) to assess the correctness of the webpage markup. It can detect the errors of the webpage (according to the norms of W3C), the server types, page sizes, text formats, encoding, file types, etc., and provide some suggestions to the demonstrated errors. This study proposed some solutions based on the analysis of the investigation.

Data Collection

The subjects of the study were the homepage of university and public libraries in Taiwan, considering that the library homepage is the entrance to all links and its website markup accuracy would affect the most users. The universities and colleges were selected by the Ministry of Education's *University and College Directory of the 97th Academic Year* (published in 2008), not including military and police school. A total of 163 libraries were selected. To avoid differences in nature, the study divided them into three categories: regular universities, universities of teacher training system, and vocational colleges. The effective samples of each group respectively were 60, 9, and 89. The date of sampling was May 4, 2009.

In addition, the directory of public libraries was taken from the *National Public Library Directory* published by the National Taichung Library. Three categories were chosen for this study, which are "National Library", "Municipal Library", and "Libraries of Cultural Affairs Bureau of City and County". The valid samples were 24 libraries in total, and the numbers for each category were 2, 2, and 20 respectively. The date of sampling was May 4, 2009.

This study used W3C Markup Validator to examine the accuracy of the markup language of university and public libraries websites in Taiwan. Through

the three indicators: webpage formats (Doctype), the number of inaccurate webpage, and the error types of the websites, to assess the accurate level of the library webpage markup and present the problems.

On the web page format, both public and university libraries have more than one Doctype, some may even have seven, as found in a public library. Different page formats may lead to different information presentations and even cause information dislocation or lost. In addition, most webpage of regular universities, vocational colleges, and public libraries are using "HTML 4.01 Transitional" format which can be used as a reference for future website design.

Regarding the rate of inaccurate websites, among the 158 valid samples of university libraries and the 24 of public libraries, all of the pages failed the test; more than 1/3 of the tested libraries had over 100 errors. The high rate of inaccuracy showed that the validation mechanism of domestic libraries needs improvement.

For the error types, the most common type was "use of wrong or undefined attributes", showing that particular attention should be paid to on the use of attributes in designing library webpage. In addition, the study divided the 48 types of errors into 6 categories in accordance with their written languages. Among the categories, Html-Tag possessed the most errors (35), indicating that the majority of those pages have wrong definition or inaccurate usage of Html tag. Therefore, more attention should be paid to on the usage of Html tags.

The study also revised 20 kinds of error types to which the W3C did not provide clear definition, and amended one case as a model. Through the amendment, the majority of the errors could be classified into two types: wrong webpage markup and tag structure. For the wrong webpage markup, tag ending possessed the highest rate of error, and as for the tag structure, tag misplacing was the worst one. The markup and structural errors mentioned above would certainly influence information exchange and transmission, thus reduce the information accessibility.

Library website is as an important platform for providing 24 hours of library service. The active maintenance of the existing library webpage is expected to ensure its standard and accuracy, which in turn would enhance readers' satisfaction toward the library services.

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