從 **ICT** 衍生的圖書資訊服務思考數位圖書館教育的內涵

A reflection on digital library education from ICT extended information services perspective

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從ICT衍生的圖書資訊服務思考
數位圖書館教育的內涵

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摘要

資訊傳播科技（ICT）影響圖書館各項服務至鉅，對於圖書資訊服務已經進入數位化的現象，例如社會參考服務、數位或虛擬參考服務，圖書資訊教育亟需配合需求，積極調整課程。本文藉由分析國內數位圖書館課程開設情況，以及近年來美國舉辦之「遠距圖書館服務會議」議題分布，了解數位圖書館的開課內涵，是否和服務的概念銜接？以及遠距圖書資訊服務關切的議題有哪些？屬於資訊傳播科技的議題有哪些？研究發現數位圖書館課程方面，顯示多數課程內容仍以建構數位圖書館的技術面為主，對於圖書館各項藉助ICT延伸的服務和管理面，則缺乏著重；而在虛擬參考服務方面，需要ICT有關的技能，包括學習平台、資訊分享平台、線上溝通等技能等。這些現象顯示圖書資訊學課程設計，需要關注、加強科技和圖書資訊服務的融合。本研究建議在有關圖書資訊服務的相關課程方面，能夠重視ICT之應用，加強ICT延伸服務教學；而數位圖書館課程，能夠從ICT系統面的焦點轉移，不僅著重科技和系統設計，且能夠全面關照ICT延伸出來的圖書資訊服務面和管理面，俾使未來圖書資訊學，包括數位圖書館課程，能落實ICT和資訊服務之間的融合。

關鍵詞：遠距圖書館服務，圖書資訊學教育，數位圖書館課程設計

一、研究背景

　　近年來數位圖書館改變了圖書館的形貌，然而數位圖書館的議題，經過十餘年來的發展，大都還是著重在技術層面，而服務的面向，相對並未受到應有的重視。不論圖書館的類型為何，其傳統功能都在保存人類知識，教育社會

大眾，提供民眾生活、工作和學習方面的資訊，以及提供閱讀休閒的功能（保存、教育、資訊、休閒）。數位圖書館的議題，似乎不應該只停留在科技的層面，圖書館的功能應該藉助新科技，加以發揚。未來數位圖書館有關的會議議題是否要一直停留在技術主導？圖書資訊學系所開設數位圖書館課程，其內容是否也只以數位圖書館的建構面，規劃以技術為主的數位圖書館課程內容？還是能夠超越系統技術，藉助數位圖書館新科技，回歸並發揚圖書館功能，將圖書館應有的服務功能，作為數位圖書館課程的規劃內容？

　　和系統科技主導正好相反的另一個現實層面，就是讀者服務的實施。目前的數位和虛擬環境，促使圖書館讀者服務的現實，實際上已超越傳統圖書館中面對面諮詢服務。但圖書資訊學系所開設的讀者服務課程，例如參考諮詢服務，是否還是維持資源導向的教學？既不重視問題導向的晤談教育，也不關切遠距圖書館服務所須具備的科技技能培訓呢？目前雖有少數圖書館積極培育虛擬參考服務人才，然而多停留在單一的科技使用，例如使用錄影、即時通訊（msn），或電子郵件（e-mail）等，也還只是少數圖書館的嘗試。

　　以上的現象，不論數位圖書館課程，可能偏重系統科技面，而忽略服務管理面；或圖書館服務課程，可能忽略科技發展，仍守在傳統的服務型態。這些問題攸關未來圖書資訊人才的專業競爭力，值得轉型中的圖書資訊學課程規畫者審慎觀察研究。本研究提出兩個問題：

　　㈠各校實施數位圖書館課程的情形如何？有哪些教學內容？對於受到科技影響而延伸的各項資訊服務的重視程度如何？

　　㈡近年來遠距圖書館服務相關會議所關心的有哪些議題？議題的內容是些甚麼？

二、文獻探討

　　最早提出數位圖書館名詞的，應是 1993 年 Edward Fox 教授和 Michael Lesk 教授所撰寫的數位圖書館白皮書（*White Paper to Digital Library*），此文件送給美國國家科學基金會（National Science Foundation, NSF），成功催生後來著名的「數位圖書館先導計畫一」和「數位圖書館先導計畫二」。Fox 和 Lesk 都是電腦科學家，最早都是關心如何建置數位圖書館，特別是系統規劃和建置的技術議題。Fox 曾經定義數位圖書館，其中之一是「經過組織的網際網路資源」（organized internet resources）[1]，特別強調「經過組織」（從嚴謹到寬鬆，有分類或索引，即後來發展的詮釋資料 metadata，到近年來發展的，由閱聽人自行應用索引標記符號分類的社會分類 folksonomy），和當時（1990 年代），資訊檢索研究者所積極研究發展的自然語言檢索技術（例如斷詞和後組合索引），可謂分庭抗

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[1] 1996 年參加 Fox 教授在 ACMSIGIR 的數位圖書館工作坊的討論。

禮。由於這個定義，google雖擁有查索所有網際網路的資源，但網際網路資源（未經組織）不能算是數位圖書館。即使Fox這個早期的定義，修改為「經過組織的數位資源」，顯然還是十分發散（fuzzy）。

　　早期有關數位圖書館的討論，明顯受限於科技議題，例如Levy（2000）就提出「數位圖書館明顯受到電腦科學主宰的科技觀點限制」（the current digital library agenda has largely been set by computer science community and clearly bears the imprint of this community's interests and vision）。這個說法，也和Saracevic和Dallbello（2001）所稱的「管見」（tunnel vision problem）呼應。

　　不過數位圖書館經過多年的發展，到了1990年代末期和千禧年初期，館藏、服務和讀者的概念，逐漸在數位圖書館的定義中出現，例如Arms（2000），認為數位圖書館是「館藏和相關的服務」（collections with "associated services"）、數位圖書館聯盟（Digital Libraries Federation, DLF）[2]提出的定義是「保存數位作品館藏以便快速、經濟有效的提供給既定的社群」（persistent collections of digital works "readily and economically available for use by a defined community or set of communities"）。Borgman（1999, 2000）的數位圖書館定義最常被引用，其定義為「館藏由一個社群的使用者建構、徵集、組織和使用，數位圖書館的功能足以支援該社群的資訊需求和使用」（collections "constructed, collected and organized, by（and for）a community of users", and functional capabilities of digital libraries to "support the information needs and uses of that community"）。綜合而言，數位圖書館的核心概念或主要構成，應該是館藏、服務和讀者社群。不過Borgman的定義，似乎用於機構典藏（Institutional Repository, IR）也可以說得通。只是，數位圖書館和機構典藏的定義如此接近，似乎也不是理想的定義。

　　數位圖書館的內涵和議題，除了系統建置的技術面、資訊組織的技術面，還有提出館藏、讀者和服務等面向。那麼數位圖書館相關課程教些甚麼呢？Saracevic和Dallbello（2001）進行一項「數位圖書館課程教些甚麼？」的調查研究。該調查研究採用兩種方法，其一，分析美國圖書館協會（ALA）認可的56所圖資課程的網頁；其二，採用電子郵件寄送問卷，寄送對象包括網際網路論壇名單，如ASIS、JESSE、ACM SIGIR，以及Humanist Discussion Group。研究發現56所學校中，有47所（89%）有數位圖書館的課程，其中獨立為一門課者有15所（32%），和其他課程整合者有8所（15%），沒有獨立的數位圖書館課程，但部分內容包含於其他課程者有23所（49%），亦即在2001年之前，有一半的學校，還沒有開設獨立的數位圖書館課程。Saracevic和Dallbello（2001）分析開設數位圖書館課程中，以工具、環境、物件、混合等四方面的內容為

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[2] A working definition of digital library (1998), http://www.diglib.org/about/dldefinition.htm.

主，並建議未來應朝向整合的方向發展，重視創作、組織、傳布、保存，使用知識記錄，以及知識本身，並將概念、內容創作、組織、科技、系統、網路、各種媒體組成的館藏、資源、保存、管理、呈現、組織、操作、典藏和檢索、獲取和使用、機構和服務、使用者社群和相關應用獲取等，以情境整合教學。

　　上述調查研究距今約有十年，其間的改變應該很大。Chu（2006）對美國圖書資訊學課程科目進行內容分析，發現數位圖書館是所謂網際網路時代之後，產生的「新課程」，在原來的核心課程清單中並沒有。Nicholson（2005）和Pomerantz等人（2006）則分別分析圖書資訊學中的數位圖書館課程進度表，希望從指定閱讀書單中，了解數位圖書館課程是否有所謂的核心知識。兩個研究同樣發現，數位圖書館課程的指定閱讀書單中，沒有核心書單，但有核心作者和核心期刊。這個現象，其中有一種解釋是，教學者每學期經常更新指定閱讀書單，所以很難從中發現共同的書單。Pomerantz等人（2006）進一步從課程進度表分析數位圖書館的教學內容，歸納課程進度表包含的模組單元有：模組一：概覽、模組二：館藏發展、模組三：數位物件、模組四：資訊／知識組織、模組五：系統架構、模組六：空間、模組七：服務、模組八：典藏和保存、模組九：專案管理、模組十：教育和研究。這十個單元，如同傳統圖書資訊學導論課，將所有導論的議題包含於其中，類似學門的知識領域介紹。另外從閱讀書單的主題加以分析，包括的議題有：館藏數位化、數位出版、多媒體、媒體格式、系統結構、系統應用等；從閱讀書單內容的數量來看，書單中數量最多是計畫和管理（450-500），其次依序是系統架構（architecture）（300-350）、館藏發展（200-250）、資訊／知識組織（150-200）、概覽（150-200）、服務（100-150）、保存（100-150）、數位物件（50-100），空間和數位圖書館教育與研究最少，都在50篇以下，研究結果所顯現的各主題的書單數量，符合數位圖館發展歷史中，偏重科技和系統架構。這個書單的結構未來是否會有所改變，乃要視圖書資訊專業對於數位服務議題的重視，是否與時俱進。

　　有關數位圖書館課程的教學方面，跨校、跨學科、遠距教學也是一種趨勢，例如之前提過的維琴尼亞科技學院（Virginia Tech）電腦科學系Edward Fox教授，就和北卡羅萊納圖書資訊學院Wildemuth教授共同開發一套數位圖書館課程模組，希望該課程，無論從圖書資訊領域（LIS）或電腦科學（CS）畢業，都能夠培訓數位圖書館館員，具備平衡的能力。該課程經過兩個階段審查測試，第一階段為專家審查，第二階段為實際營運測試、修正模組，並收集相關課程補充資料。而該跨學科領域的數位學習課程設計，係根據Fox教授領導的Virginia Tech數位圖書館研究實驗室所發展的5S理論開發的數位課程。5S包括串流（streams）、結構（structures）、空間（spaces）、情境（scenarios），和社群（societies）。串流是指各種媒體的整合表達；結構是指課程內容有目錄、索

引、超文件等組織；空間是指2D或3D的虛擬空間、地理資訊系統等；另外要注意學習者了解的情境，以及學習社群的角色安排等（Yang et al, 2006）。

　　數位圖書館課程的重要性是不容迴避的，根據數位圖書館的定義，顯然這門課不應該是一門技術的課程，有關的教學內容和實施方法還在發展之中，需要進一步探討和了解。換言之，除了系統、館藏、服務、典藏、組織等議題之外，服務和管理層面的知識也十分重要，應該要和實體的圖書館服務密切整合，例如版權協商、智財權管理、資料庫、系統行政管理、人事和專案管理、可用和使用者服務、技術和結構後設資料等議題，也是數位圖書館教育課程之中需要涵蓋的主題。由於數位圖書館同時受到不同學科領域的重視，Saracevic和Dallbello（2001）曾建議圖書資訊學領域（Library and Information Science, LIS）有關數位圖書館課程內容方面，應進一步劃出數位圖書館的範圍和邊界，研究了解圖書資訊學之外的數位圖書館其他的領域，例如電腦科學、醫學資訊學、數位人文學等之差異，以便進一步訂定獨特的課程內容。這個建議，十年後的現在仍然有效，還需要繼續努力建設。

　　至於遠距圖書館服務會議方面，1982年開始，在密蘇里州聖路易市舉辦「第一屆遠距校園圖書館服務」（First Off-Campus Library Services Conference, 1982），以後陸續舉辦，平均每兩年舉辦一次，早期有時隔三年，有時隔一年，包括1985、1986、1988、1991、1993、1995、1998、2000、2002、2004、2006、2008等，到了2010年4月舉辦第14屆會議（各屆會議資料如附錄）。這個會議的主要發起和參與者，大都是大學中的遠距教育和圖書館員，早期的會議內容大都是如何提供服務，如何評鑑遠距學習者的圖書館資訊服務。近幾年來，資訊傳播科技改變了教育和資訊傳遞的方式，促進數位學習發展，圖書館也極力追求創新的資訊服務，期盼能夠提供與時俱進的數位資訊服務，支援教育功能，因此近十年來該會議論文的議題及其分布狀況，涉及遠距離的圖書資訊服務項目，以及資訊傳播科技的需求和發展，便十分值得分析探究。

三、研究方法

　　本研究有兩個分析對象，有關數位圖書館課程方面，首先於2010年3月從各校圖書資訊系所的課程網頁中，收集圖書資訊學系所開設課程，課程名稱有「數位」或「數位圖書館」字樣者，即加以擷取，並製成表（如表1），然後加以分析、統計。

　　有關科技延伸圖書館服務的議題，則選擇2000年的開頭和結尾的第10屆和13屆（2002、2008）「遠距校園圖書館服務會議」做為研究案例，以便了解近十年來的資訊傳播科技對遠距圖書資訊服務的影響。先收集其論文題目做為分析的文本，亦即擷取其議程及會議論文集的目次，彙整完成研究文本。然後利

用 Atlis.ti 質化分析軟體，將各篇論文的題目加以分析，先以開放編碼的方式，產生子類目，再將相關的子類目集合，歸納成為主題。

四、研究發現

根據資料分析結果，本研究發現各校目前數位相關課程，包括數位圖書館等，都為選修，分別是 2 到 3 學分。除了輔大和世新，各校都有開設數位圖書館或包含於一較長的課程名稱中，例如名稱有專題、導論、研討等，或和數位典藏或數位博物館合成一門課（如表 1）。和十年前 Saracevic 和 Dallbello（2001）的調查研究結果比較，相似之處是數位圖書館課程常和其他議題合成一門課；不同之處是，此項分析發現，國內開設數位圖書館課程的學校高達四分之三，開設數位圖書館課程的普遍程度，明顯比該研究十年前的研究結果要高。

表 1　圖資系所數位相關課程列表

課程名稱	必/選	學分數
台大圖資系所		
數位圖書館與博物館研討（碩）	選	2
數位典藏概論（碩）	選	2
數位典藏專題研究（碩）	選	3
數位典藏專題研究（博）	選	3
台師大圖資所		
數位典藏與數位圖書館研究	選	3
數位出版研究	選	3
線上參考服務研究	選	3
政大圖檔所		
數位圖書館	選	3
中興大學圖資所		
數位圖書館	選	3
電子資源組織與管理	選	2
網路資訊服務專題	選	2
數位典藏與知識管理	選	2
（開課名稱為數位典藏專題實作）		
數位參考服務	選	2
輔大圖資系所		
圖書館電子資訊服務專題（碩）	選	2
淡江資圖系所		
數位圖書館專題	選	2
數位典藏概論	選	2
數位學習與圖書館	選	2
數位檔案管理	選	3
數位資訊保存	選	3
玄奘圖資系		
數位圖書館導論	選	2
數位資訊組織	必	2
數位館藏發展與管理	選	2
電子書與電子期刊	選	2
世新資傳系所		
數位典藏規劃	選	3

　　研究分析結果也發現，各校對於數位相關課程的重視程度不一，中興大學和淡江大學各有五門課，台灣大學和玄奘大學各有四門，台灣師範大學有三門課，政治大學、輔仁大學和世新大學各有一門課，不過台大四門課中，有三門課都是數位典藏方面的課（如表1）。

　　有關各校數位圖書館相關課程進度表的內容分析結果，採用Pomerantz和Fox教授等人所規劃的十個教學模組，作為分析架構，發現各校的數位圖書館課程對於資訊知識管理組織、服務、典藏和保存都有關注，而對於空間和專案管理兩項都有忽略的現象，尤其空間方面，在本次的課程內容分析中，沒有任一課程提及（如表2）。Pomerantz和Fox為數位圖書館規畫十個教學模組，應該是為數位圖書館教學內容提供一個最大公約數，各校可依據各自的強項和學生的特質和需求，依大學部和研究所，加以發展課程重點。其中列出空間模組，雖在本次數位圖書館課程分析中沒有發現案例，但在最近的各學術圖書館中，learning commons不斷被討論，也可反映Pomerantz和Fox的十個模組可能具有普遍特質的專業議題，而較少涉及各別國家的文化議題。此項分析，可做為各校規劃、發展數位圖書館相關課程內容之參考。

表2　各校開設數位圖書館課程內容分析

學校	台大 數位圖書館與博物館研討	師大 數位典藏與數位圖書館研究	政大 數位圖書館	中興 數位圖書館	淡江 數位圖書館專題	玄奘 數位圖書館導論
概覽	課程介紹、數位圖書館與博物館概論	數位典藏與數位圖書館導論、全球數位典藏與數位圖書館導覽	數位典藏與數位圖書館發展現況概論	數位圖書館概論、國內外數位圖書館發展狀況、數位圖書館構成要素	數位圖書館起源、數位圖書館定義與範圍，及數位資訊的生命週期	資訊時代圖書館的挑戰、數位圖書館的意涵
館藏發展	數位圖書館與博物館發展趨勢（國內外）	資料徵集與永久保存	數位圖書館的徵集、數位保存與典藏	數位資源選擇、數位圖書館建置流程		
數位物件	數位圖書館核心技術	資訊與物件架構			數位內容與館藏資源選擇、發展、淘汰與保存	多媒體處理技術
資訊/知識組織	數位圖書館核心技術	結構化詮釋資料、知識表達與組織、XML與數位圖書館	數位圖書館核心技術-XML technology、RDF、OWL、物件模型（Object Model）、詮釋資料（Metadata）與數位典藏標準	數位圖書館的資訊組織	知識組織與管理	數位資訊組織
系統架構	數位圖書館系統設計與操作	數位典藏與數位圖書館系統設計	數位圖書館的資訊系統與管理	資料庫系統與網站建置		資料庫技術
空間						
服務	數位圖書館服務模式及發展趨勢	數位圖書館時代的館員知能	數位圖書館的使用者研究與自動化（個人化）服務	數位圖書館的評估與使用者研究、數位圖書館員的核心能力	數位圖書館的經營模式（business model）與服務	數位讀者服務
典藏和保存	數位典藏理論與實務、數位圖書館的互通性問題	資料徵集與永久保存	數位圖書館的徵集、數位保存與典藏、檔案數位化與典藏概論	數位資訊的保存維護與永久典藏	資訊互操作與資訊保存暨典藏	數位典藏
專案管理					數位圖書館經營模式與服務	
教育和研究			數位圖書館支援數位學習		數位圖書館研究方向	

　　另一方面，分析前述兩次「遠距圖書館服務會議」論文篇名，將各篇論文依照論文題目，加以編碼，將編碼結果稱為子類目，共發現有62個子類目。再將相關的子類目聚集一起，加以命名，稱為主題，發現兩次「遠距圖書館服務會議」的主題有管理、新型態資訊服務、館藏、使用者、合作、素養教育、科技和其他。計算各主題中，子類目出現的次數，發現以素養教育的子類目數量最多，共有19個子類目，因此再將19個子類目，細分成資訊素養、圖書館利用教育和研究素養三個群組（如圖1）；出現頻率第二高的主題是管理，有9個子類目；新型態資訊服務、館藏發展和使用者各有7個子類目；合作有5個子類目；科技有4個子類目；其他項有2個子類目，總計有62個子類目（如表3）。

表3　10th 及 13th off campus conference 主題和子類目次數

off campus conference 主題	子類目次數
Literacy education 素養教育	19
Management 管理	9
New information services 新型態資訊服務	7
Collection development 館藏發展	7
User 使用者	7
Collaboration 合作	5
Technology 科技	4
Others 其他	2
總　計	62

　　以下是「遠距圖書館服務會議」論文篇名編碼和命名的結果，依照子類目多寡順序，先列出主題（主題後，若有群組，例如素養教育，則列出群組），之後列出子類目，在各子類目之下，將有關篇名以斜體字列出參考，篇名之後，以括弧註明資料來源，例如 *[10th, p.35]* 表示第10屆會議，在論文集第35頁。

　　首先，素養教育（literacy education）是該會議討論最廣泛的議題，也是近年來圖書資訊服務項目中，極為顯著、重要的服務項目。進一步分析歸納，發現素養教育議題之後，可分成資訊素養、圖書館利用教育，和研究素養三個群組。群組之後，為子類目，例如資訊素養群組下有9個子類目、圖書館利用教育群組有7個子類目，研究素養群組有3個子類目，共計19個子類目（如圖1）。相關編碼範例如后：

1. 素養教育（literacy education）

1.1 資訊素養

⑴國民義務教育教師的資訊素養教育（information literacy education: modules: k-12 teacher preparation program）

Information Literacy Modules as an Integral Component of a K-12 Teacher Preparation Program: A Librarian/Faculty Partnership [10th, p.165]

⑵利用網路教學的資訊素養教育（information literacy education: teaching:

using invisible web）

　　Using the Invisible Web to teach Information Literacy [10th, p.295]

　　⑶資訊素養教育線上課程（information literacy education: online course）

　　Embedding General Education Competencies into an Online Information Literacy Course [13th, p.255]

　　⑷資訊素養教育的前測（information literacy education: pre-assessment）

　　How Does a Pre-Assessment of Off-Campus Students Information Literacy Affect the Effectiveness of Library Instruction? [13th, p.187]

　　⑸利用虛擬輔導進行資訊素養教育（information literacy education: using visual tutorials）

　　Visual Tutorials for Point- of-Need Instruction in Online Courses [13th, p.199]

圖1　素養教育三群組和子類目

⑹資訊素養標準（information literacy: standards）

Distilling the Information Literacy Standards; Less is More [10th, p.321]

⑺利用數位學習平台進行資訊素養教學（information literacy: tutorial: using eLeraning platform）

Using WebCT, Wiki Spaces, and ePortfolios for Teaching and Building Information Literacy Skills [13th, p.115]

Modularizing Information Literacy Training via the Blackboard eCommunity [13th, p.211]

Ship to Shore: An Online Information Literacy Tutorial Using BlackBoard Distance Education Software [10th, p.141]

⑻資訊素養教育線上和傳統實施方式比較（information literacy: Online vs. Face compare）

Information Literacy Successes Compared: Online vs. Face to Face [13th, p.91]

⑼資訊焦慮（library anxiety）

The Relationship between Library Anxiety and Off-Campus Adult Learners [10th, p.407]

Using Online Tutorials to Reduce Uncertainty in Information Seeking Behavior [13th, p.81]

1.2 圖書館利用教育

⑴圖書館書目教學（library instruction: Bibliographic Instruction）

Watch for the Little Red Light: Delivery of Bibliographic Instruction by Unconventional Means [10th, p.221]

⑵圖書館軟體教學（library instruction: adobe captivate）

Beyond Screencasting: Using Adobe Captivate to Create Scenario-Based Library Instruction [13th, p.379]

⑶圖書館動畫教學（library instruction: animated tutorials）

Creation, Management, and Assessment of Library Screencasts: The Regis Libraries Animated Tutorials Project [13th, p.33]

⑷圖書館教學評鑑（library instruction: assessment）

How It's Done: Examining Distance Education Library Instruction and Assessment [13th, p.157]

⑸圖書館線上教學（library instruction: online）

Taking Library Instruction into the Online Classroom: Best Practices for Embedded Librarians [13th, p.359]

⑹遠距學習者多元學習風格的教學（learning styles: meet the diverse needs of

distance learners）

> *A Kaleidoscope of Learning Styles: Instructional Supports that Meet the Diverse Needs of Distant Learners [10th, p.287]*

⑺圖書館教學利用社會網絡（library instruction: using social networks）

> *Off Campus and Off the Web Site: Reaching and Teaching Library Users Online on Social Networks [13th, p.373]*

1.3 研究素養

⑴研究素養列入博士生教育（research literacy: course design: for education doctoral student）

> *Creating a Research Literacy Course for Education Doctoral Students: Design Issues and Political Realities of Developing Online and Face-to-Face Instruction [10th, p. 397]*

⑵研究素養的教學及資源（research literacy: instruction and resources）

> *Bring the Library to the Students: Using Technology to Deliver Instruction & Resources for Research [10th, p.19]*

⑶論文寫作過程及焦慮（research literacy: thesis process: thesis anxiety）

> *Managing Thesis Anxiety: A Faculty—Librarian Partnership to Guide Off-Campus Graduate Education Students Through the Thesis Process [10th, p.265]*

管理（management）子類項目包括新型態遠距館員培訓、認證、建置數位圖書館以協助遠距教學、發展及設計線上圖書館、評鑑、圖書館對遠距教學的服務計畫、促進遠距學習者使用圖書館服務、品質控管、收費問題等9項（如圖2）。編碼範例如后：

2. 管理（management）

⑴新型態遠距館員培訓（new distance librarian's training）

> *Help! I'm the New Distance Librarian—Where do I Begin? [10th, p.309]*

> *Embedded Librarians: MLS Students as Apprentice Librarians in Online Courses [13th, p.217]*

> *Getting Published: An Overview for Off-Campus Librarians [13th, p.227]*

⑵遠距學習認證（distance learning accreditation）

> *Surviving a Distance Learning Accreditation Visit [10th, p.377]*

⑶建置數位圖書館以協助遠距教學（building a digital library in support of distance learning）

> *Building a Digital Library in Support of Distance Learning [10th, p.249]*

⑷發展及設計線上圖書館（developing and designing online library）

All Aboard the eTrain: Developing and Designing Online Library Instruction Modules [10th, p.331]

⑸遠距學習圖書館服務評鑑（dlls evaluation）

Grading Ourselves: Using the ACRL Guidelines for Distance Learning Library Services to Develop Assessment Strategies [10th, p.259]

Aligning the Assessment Process in Academic Library Distance Education Services using the Nash Model for Improved Demonstration and Reporting of Organizational Performance [13th, p.49]

⑹圖書館對遠距教學的服務計畫（planning library services for distance education）

Documenting Priorities, Progress, and Potential: Planning Library Services for Distance Education [10th, p.173]

Fair is fair, or is it? Library Services to Distance Learners [10th, p.119]

⑺促進遠距學習者使用圖書館服務（promote: library services for distance learners）

Thinking Outside the Library: How to Develop, Implement and Promote Library Services for Distance Learners [10th, p.27]
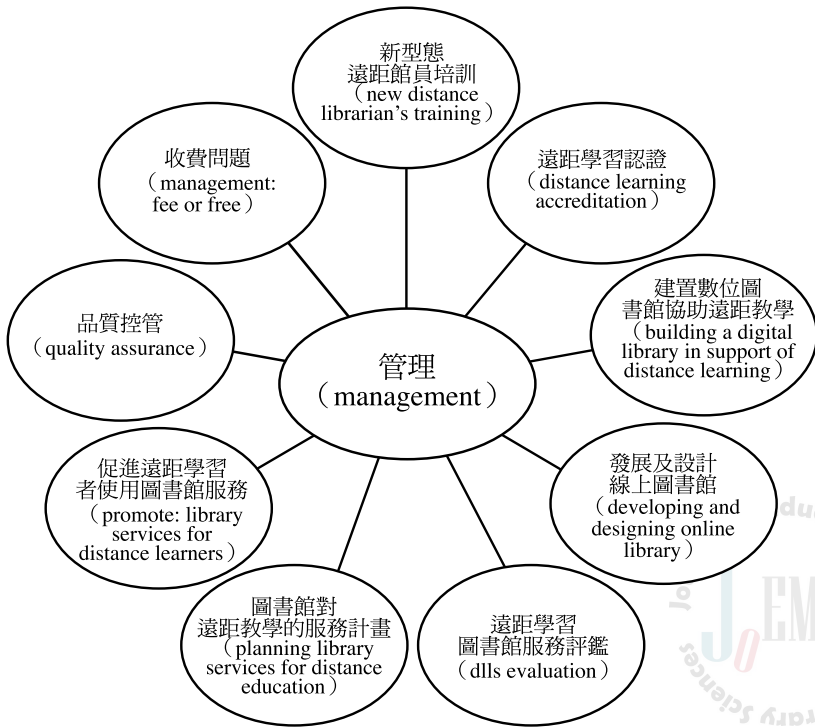

圖2　管理和子類目

⑻品質控管（quality assurance）

Quality Assurance and Models of Service in an Environment of Change [10th, p.151]

⑼收費問題（management: fee or free）

Fee or Free? New Commercial Services are Changing the Equation [10th, p.361]

新型態資訊服務（new information services）包括數位文件傳遞、電子預約/虛擬預約室、期刊文獻之近用、遠距參考、校外圖書館服務、對圖書館服務的影響、學科參考館員的角色等7項（如圖3）。相關編碼結果如后：

3. **新型態資訊服務**（new information services）

⑴數位文件傳遞（digital document delivery）

Digital Document Delivery to the Desktop: Distance is No Longer and Issue [10th, p.193]

Do Off- Campus Students Still Use Document Delivery? : Current Trends [13th, p.19]

ILLiad, Document Delivery, and the Distance Student: How Document Delivery can Enhance Support for Distance Library Users [13th, p.167]

⑵電子化指定參考資源服務/虛擬指定參考書室（electronic reserve/virtual reserve room）

The Ins and Outs of Providing Electronic Reserves for Distance Learning Classes [10th, p. 413]

The Virtual Reserve Room Extending Library Services Off-Campus [10th, p.11]

⑶期刊文獻之近用（access to journal literature）

Never Having to Say You're Sorry: An Integrated, WWW-Based Software Solution for Providing Comprehensive Access to Journal Literature [10th, p.239]

⑷遠距參考服務（reference at a distance）

Being RAD: Reference at a Distance in a Multi-campus Institution [10th, p.423]

⑸校外圖書館服務（off campus library services）

Establishing a Baseline: History, Evolution and Evaluation of Grand Valley State University's Off-Campus Library Services [13th, p.267]

⑹回應式的的圖書館服務（responsive library services）

Reducing High Anxiety: Responsive Library Services to Off-Campus Non-traditional Students [10th, p.277]

⑺學科參考館員的角色（subject specialist librarian's role）

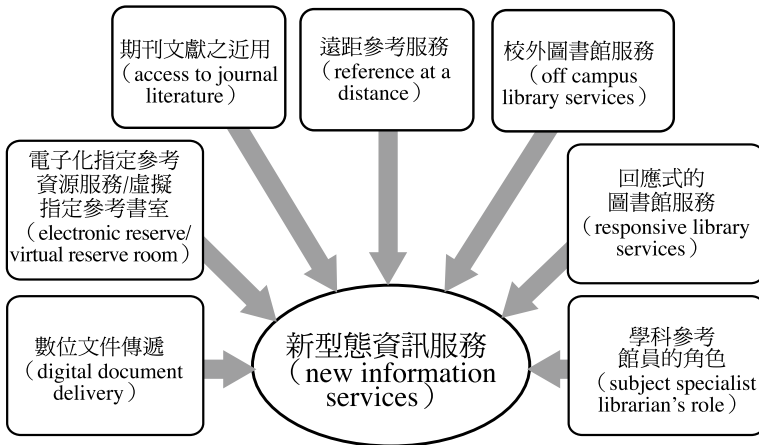*The Subject Specialist Librarian's Role in Providing Distance Learning Services [13th, p.99]*

圖3　新型態資訊服務和子類目

　　值得注意的是遠距圖書館服務的議題也有館藏發展（collection development），相關子類目包括遠距教學資源、開放式線上館藏、電子書使用、商業資訊電子資源、護理電子資源、電子資源圖形介面、主題指引等7項（如圖4）。相關編碼結果如后：

4. **館藏發展**（collection development）

(1)遠距教學的館藏資源（CD for distance education）

Distance Education from a Collections Development Perspective [10th, p.93]

(2)開放式線上館藏（open online collection）

Academic Libraries as Digital Gateways: Linking Students to the Burgeoning Wealth of Open Online Collections [13th, p.177]

(3)電子書使用（use of ebook）

Do Off-Campus Students Use E-books? [13th, p.149]

(4)商業主題的電子資源（e-resources by subject: business）

Here, There and Everywhere: A Virtual Library for Access to Business Information [10th, p.227]

(5)護理主題的電子資源（e-resources by subject: nursing）

Collaboration for Program Enrichment: Exploring JSTOR and Nursing [10th, p.69]

(6)電子資源的圖形介面（e-resources: graphic interface）

VERSO Graphic Interface to Reference Sources: A Project of Quinnipiac University's Arnold Bernhard Library [13th, p.11]

(7)虛擬焦點團體的主題指引（subject guide: virtual focus groups to access subject guide）

Building a Better M.I.C.E. Trap: Using Virtual Focus Groups to Assess Subject Guides for Distance Education Students [13th, p.129]
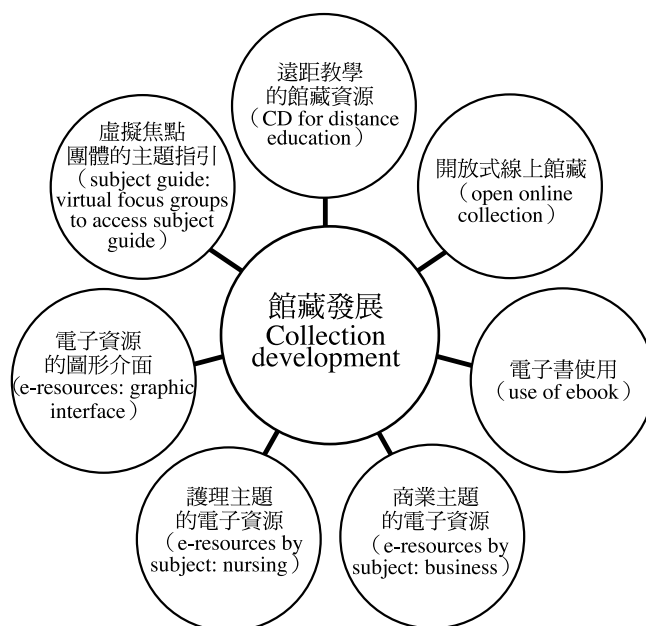
圖4　館藏發展和子類目

　　使用者（user）子類目包括研究生、海外留學生、國際研究生、需求評估、線上教育師生需求評估、減少非傳統教學學習者之焦慮、遠距學習者等7項（如圖5）。相關編碼結果如后：

5.使用者（user）

⑴研究生（perceptions: postgraduate students）

Off-Campus Post Graduate Students' Perceptions About Distance Library Support Services: A Case Study of Allama Iqbal Open University Libraries Network [13th, p.1]

⑵海外留學生（study abroad students）

Study Abroad Students: Designing Library Services to Meet Their Needs [13th, p.351]

⑶國際研究生（international graduate students）

Taking the Distance Out of Library Services Offered to International Graduate Students: Considerations, Challenges, and Concerns [10th, p.131]

⑷需求評估（need assessment）

Who's Out There in Cyberspace: Profiling the Remote Learner for Service Design [10th, p.389]

The Answer You Get Depends on Who (and What) You Ask: Involving Stakeholders in Needs Assessments [10th, p.301]

⑸線上教育師生需求評估（online education faculty: need assessment）

How May We Help You? Online Education Faculty Tell Us What They Need from Libraries and Librarians [13th, p.295]

⑹減少非傳統教學學習者之焦慮（reduce anxiety for nontraditional students）

Reducing High Anxiety: Responsive Library Services to Off-Campus Non-traditional Students [10th, p.277]

⑺遠距學習者（library services to distance learners: recast the model）

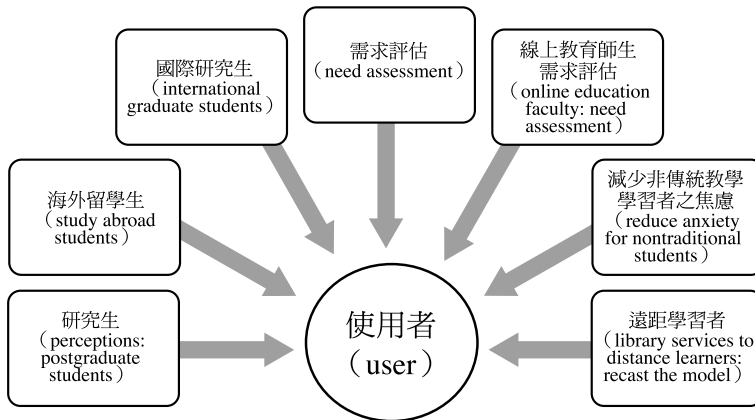*Library Services to Distance Learners: Is it Time to Recast the Model? [13th]*

圖5　使用者和子類目

　　合作（collaboration）議題包括合作遠距教學設計、部門間的合作、館員教師合作、社區合作、虛擬圖書館聯盟等5項（如圖6）。相關編碼結果如后：

6. 合作（collaboration）

⑴遠距課程設計（distance learning design）

Distance Learning Librarian: Essential Team Member in Distance Learning Design [10th, p.35]

Building A Virtual Campus: Librarians As Collaborators In Online Course Development and Learning [13th, p.279]

⑵部門間合作（interdepartmental partnership）

Increasing Document Delivery to Off-Campus Students through an Inter-departmental Partnership [10th, p.111]

Branching Out: Communication and Collaboration among Librarians at Multi-campus Institutions [13th, p.57]

⑶館員教師合作（librarian faculty partnership）

Collaboration between Distance Education Faculty and the Library: One Size Does not Fit All [10th, p351]

Managing Thesis Anxiety: A Faculty-Librarian Partnership to Guide Off-Campus Graduate Education Students through the Thesis Process [10th, p.265]

At the Crossroads: Library and Classroom [10th, p.199]

Information Literacy Modules as an Integral Component of a K-12 Teacher Preparation Program: A Librarian/Faculty Partnership [10th, p.165]

Added Value, Multiple Choices: Librarian/Faculty Collaboration in Online Course Development [10th, p.369]

Collaboration for Program Enrichment: Exploring JSTOR and Nursing [10th, p.69]
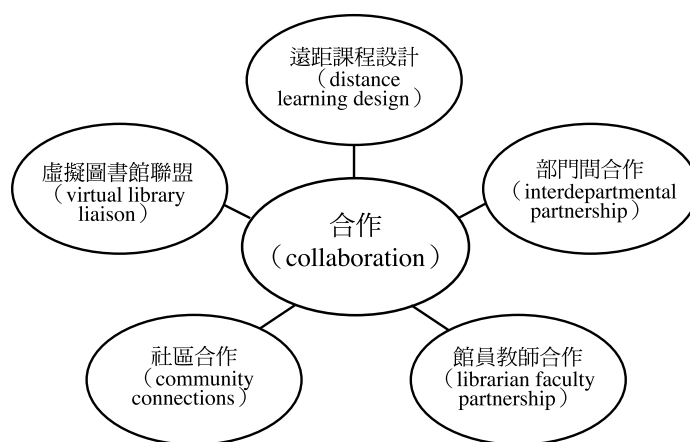

圖6　合作和子類目

⑷社區合作（community connections）

Delivery to the Sharp End of the Spear: Responding to the Need for Library Support to the Deployed and Downrange Military Community [13th, p.247]

Community Connections in Off-Campus Outreach Services [10th, p.213]

⑸虛擬圖書館聯盟（virtual library liaison）

The Virtual Library Liaison: A Case Study at an Online University [13th, p.335]

　　科技（technology）子類目包括數位學習平台、互動時代的圖書館、網頁的內容及設計、網頁的可用性測試等4項（如圖7）。相關編碼結果如后：

　　7. 科技（technology）

　　⑴數位學習平台（elearning platform）

Blackboard and XanEdu: A New Model for an Old Service [10th, p.77]

　　⑵互動時代的圖書館（library 2.0）

Beyond the Library's Walls: Using Library 2.0 Tools to Reach Out to All Users [13th, p.285]

⑶網頁的內容及設計（web sites: content and design）

Content and Design of Academic Library Web Sites for Distance Learners: An Analysis of ARL Libraries [10th, p.1]

⑷網頁的可用性測試（web site: usability test）
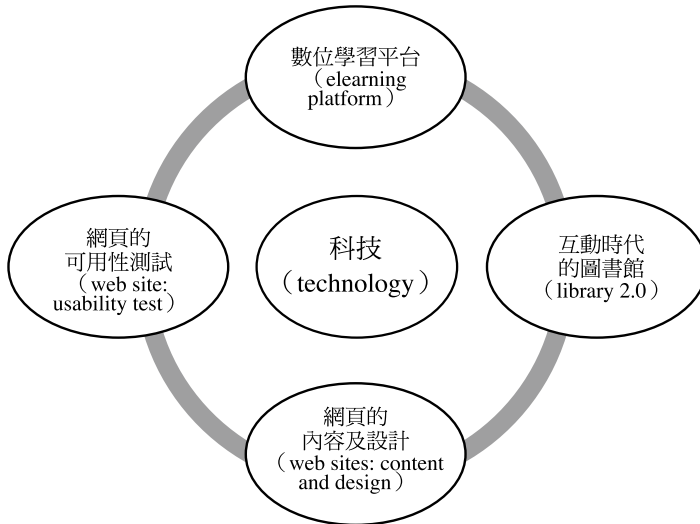
Usability Testing of Library Websites [13th, p.371]

圖7　科技和子類目

　　其他（others）有2個子類目，包括同儕審查技能及參考文獻的品質等2項（如圖8）。相關編碼結果如后：

8. 其他（others）

⑴研究：同儕審查技能（research: peer review skills）

Peer-review 101: Get Ready to Make Your Mark [13th, p.377]

⑵研究：參考文獻的品質（research: quality of reference list）

Expanded Assessment Study Examining the Citation Patterns from Traditional and Nontraditional Institutions and Their Effect upon the Quality of Doctoral Dissertation Reference Lists [13th, p.315]
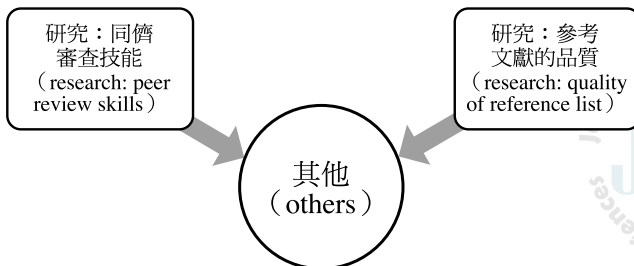

圖8　其他

五、結論與建議

　　本文藉由分析數位圖書館相關課程的開設情況，以及開設的內容，發現數位圖書館相關課程多為選修，而性質介於數位圖書館建置和導論之間。由ICT延伸而出的資訊服務和管理的議題，並未能完全為目前的教學內容所涵蓋。而分析近十年來，圖書館支援遠距讀者的相關會議論文題目，其議題分布方面，則發現素養教育，包括圖書館利用教育、資訊素養教育，以及研究素養等，是圖書館服務的重要項目。ICT、數位圖書館，和相關的服務和管理議題，需要進一步周延的規劃，能夠重視圖書資訊服務所需要的技能，而不是一直停留在數位圖書館建置的課題，俾便對於系所開設課程和教材規畫設計有所省思。

　　數位圖書館課程教些甚麼？是類似傳統圖書資訊學導論課？還是介紹如何建構數位圖書館的課？在教學目標中應該加以釐清。若是前者，就應該廣泛涵蓋ICT衍生的資訊服務和管理等課題，而不能夠省略對於數位服務課題的介紹；若是後者，課程內容集中於建構，那麼在圖書資訊課程的總體規劃中，就要另外加強數位資訊服務的相關課程，例如數位參考諮詢服務、數位環境的資訊素養教育議題，才能培養新一代的圖書館員具備勝任專業服務的能力，強化未來圖書資訊專業人才的專業競爭力。本文希望引起更多同道，共同來關心圖書資訊學如何將科技，以及衍生的數位服務、數位管理等課題，無縫的融合到課程設計之中。

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附　　錄

Fourteenth Off-Campus Library Services Conference, Cleveland, Ohio, April 2010.

Thirteenth Off-Campus Library Services Conference, Salt Lake City, Utah, April, 2008.

Twelfth Off-Campus Library Services Conference, Savannah, Georgia, April 2006. Includes 28 papers, 406 pages.

Eleventh Off-Campus Library Services Conference, Carefree, Arizona, May 2004. Includes 36 papers, 414 pages.

Tenth Off-Campus Library Services Conference, Cincinnati, Ohio, April 2002. Includes 44 papers, 442 pages.

Ninth Off-Campus Library Services Conference, Portland, Oregon, April 2000. Includes 34 papers, 311 pages.

Eighth Off-Campus Library Services Conference, Providence, Rhode Island, April 1998. Includes 27 papers, 350 pages.

Seventh Off-Campus Library Services Conference, San Diego, California, October 1995. Includes 38 papers, 405 pages.

Sixth Off-Campus Library Services Conference, Kansas City, Missouri, October 1993. Includes 30 papers, 327 pages.

Fifth Off-Campus Library Services Conference, Albuquerque, New Mexico, 1991.

Fourth Off-Campus Library Services Conference, Charleston, South Carolina, 1988.

Third Off-Campus Library Services Conference, Reno, Nevada, 1986.

Second Off-Campus Library Services Conference, Knoxville, Tennessee, 1985.

First Off-Campus Library Services Conference, St. Louis, Missouri, 1982.

A Reflection on Digital Library Education from ICT- Extended Information Services Perspective

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Abstract

This paper argues the legitimacy of current digital library related curriculum to support the ICT extended information services, such as online references, on-line library instruction, information literacy education, etc. In order to understand what has been taught in Digital Library related courses, it first collected and analyzed digital library related curriculum in LIS programs in Taiwan. In order to understand the current information services issues, it collected and analyzed the titles of 2002 and 2008 Off-campus information services conference proceedings. The research findings reveal that Digital Library courses are not required but selected in all programs. The content of which is between an introductory and architecture base. Skills and training for ICT extended information services are found not the focus of current Digital Library education. On the other hand, the off-campus conferences show a broad need and issues for information services, such as library instruction, information literacy education, and research literacy, etc. The findings suggest a discern review on future DL curriculum design to take into consideration of skills and training on ICT extended information services issues.

Keywords: Off-campus information services; LIS education; Digital Library curriculum design

SUMMARY

Research Background

In recent years, digital libraries have changed the appearance of traditional libraries. However, the topics and issues of digital libraries have been mostly discussed from the perspective of technologies; library user services did not receive enough attention. Digital library (DL) issues should not just stay on the technology level and library functions should be promoted by the implementation of new technologies. Library user services are the opposite of the technology-leading standpoint. Regarding the current digital and virtual environment, to improve user services, professionals need to pay attention to the application of ICT.

This study proposed two research questions as follows:

1. How do LIS programs offer DL courses? What are the teaching contents? How is library information services valued under the impact of technologies?

2. What are the recent issues and topics discussed at the Off-Campus Library Services Conferences? What is included in each subject?

Literature Review

What to teach about digital libraries?

Saracevic and Dallbello (2001) conducted a survey of digital library (DL) education. They found that, of 56 LIS programs, 47 (89%) included DL contents in some form or another in their curriculum; of these 47 LIS programs, 15 (32%) offered an independent course for DL education; 8 (15%) provided combination of independent DL course and DL content integrated in other courses; 23 (49%) integrated DL contents into other courses, but did not have an independent DL course. Saracevic and Dallbello's research shows that, before 2001, half of the LIS programs did not offer an independent or full-blown DL course.

Pomerantz, etc. (2006) analyzed the reading lists assigned in DL courses at LIS programs. For example, the curriculum framework included the following modules: Module 1, Overview; Module 2, Collection development; Module 3, Digital objects; Module 4, Information/knowledge organization; Module 5, Architecture; Module 6, Space; Module 7, Services; Model 8, Preservation; Model 9, Management and evaluation; Module 10, DL education and research. The reading lists reveal that the most frequently identified publications are the subjects of Project management and it was followed sequentially by Architecture, Collection development, Information/knowledge organization, Overview, Services, Preservation, and Digital objects. The studies on Space and Digital library education and research are very few.

Can library information services catch up with the trend of information technologies?

In 1982, the First Off-Campus Library Services Conference was held in St. Louis, Missouri. After that, the conference was held every other year and the 14th conference was held in April, 2010. Since information technologies changed education and information delivery methods, to investigate the subjects covered in these conferences in terms of contents and distribution will help us to better understand the development of DL education and information technology.

Research Methods

In March 2010, the researcher started to view the list of course offerings in LIS programs on the open web. Syllabi were collected from courses in which the phrase "digitalization" or "digital library/libraries" were used in either the course title or short catalog description. A table was compiled based on the collected syllabi for statistics analysis.

As for the topics of the extended library services which are derived from the impact of technologies, the 10th and 13th Off-Campus Library Services Conferences were taken as research cases. First, the paper titles in these two conference proceedings were collected; then, the conference programs and bibliographies of the conference proceedings were integrated to a research document; last, the Atlis. ti software was used for data analysis in which each paper titles were analyzed by the open source code; after the sub-categories were generated, several related sub-categories were integrated to and concluded as one group.

Research Findings

This study found that the DL courses in LIS programs were elective and usually provided 2 to 3 credits. Compared with the investigation of Saracevic and Dallbello in 2001, the similarity of two research lies in that DL education was often combined with other related contents in a course; the difference between two research is that this study found there were about 3 quarters LIS programs offering DL courses in Taiwan; the popularity of the DL education is significantly higher than a decade ago in the states.

It is also found that each LIS program has a different emphasis on DL education. For example, both Chung Hsing University and Tamkang University offers 5 courses on DL, for National Taiwan University and Hsuan Chuang University, each offers 4, National Taiwan Normal University offers 3; for ChengChi University, Fu Jen University, and Shih Hsin University, each of them offers 1 course. Nevertheless, in the 4 courses provided by National Taiwan University, 3 of them are about digital preservation, which are displayed in table 1.

By analyzing the paper titles in the conference proceedings, the researcher found that the groups of subjects of the two Off-Campus Library Services Conferences include Management, New information services, Collection preservation, Users, Collaboration, Information literacy education, Technology, and others. Among these groups, literacy education has the largest number of sub-categories, which are 19. These 19 sub-categories can be further divided into three groups: information literacy, library instruction, and research literacy. Management, another group, has the second largest number of sub-categories, which are 9. For the subjects like New information services, Collection preservation, and Users,

each of them has 7 sub-categories. Collaboration has 5 sub-categories; Technology has 4; others have 2. In sum, there are 62 sub-categories of these subjects. Under each sub-category, the related paper titles were listed in Italic for reference; at the end of each title, the information sources were listed in parentheses. For example, *[10th, p.35]* means the 10th conference and Page 35 in the conference proceeding.

Table 1 DL Courses Offered by LIS Programs

Courses	Required/Elective	credit
Department and Graduate Institute of Library and Information Science at Taiwan University		
Digital libraries and museums (Master)	R	2
Introduction to digital preservation (Master)	R	2
Digital preservation (Master)	R	3
Digital preservation (Doctoral)	R	3
Graduate Institute of Library and Information Studies at Taiwan Normal University		
Digital preservation and digital library studies	E	3
Digital publishing studies	E	3
Online reference studies	E	3
Graduate Institute of Library, Information and Archival Studies at ChengChi University		
Digital libraries	E	3
Graduate Institute of Library and Information Science at Chung Hsing University		
Digital libraries	E	3
Electronic resource organization and management	E	2
Special topics: Internet information services	E	2
Special topics: Digital preservation and knowledge management	E	2
Digital reference services	E	2
Department of LIS at Fu Jen University		
Library electronic information services (Master)	E	2
Department of Information and Library Science at Tamkang University		
Special topics: Digital libraries	E	2
Introduction to digital preservation	E	2
Digitalization and libraries	E	2
Digital archive management	E	3
Digital information preservation	E	3
Department of LIS at Hsuan Chuang University		
Introduction to digital libraries	E	2
Digital information organization	R	2
Digital collection development and management	E	2
Electronic books and journals	E	2
Department of Information and Communications at Shih Hsin University		
Digital preservation planning	E	3

Suggestions

This paper examined the DL curriculums and courses offered by LIS programs in Taiwan. The research findings are as follows: a. most courses on the DL education are elective and they are mostly regarding DL architecture and

overview; b. the issues and topics on information services and management which are extended from ICT are not covered in the current curriculum; c. in recent 10 years, the papers from the Off-Campus Library Services Conferences reveal that literacy education which includes information literacy, library instruction, and Research literacy was the most significant program in library services.

What to teach about digital libraries? Is it similar to the introductory courses for the traditional library science programs? Or, is it about DL architecture? It should be clearly stated in the teaching purposes. If a DL course is about an overview or a traditional introduction, the topics and issues about information services and management extended from ICT should be widely covered. If the DL course is about architecture, the general curriculum design should reinforce the related courses, such as teaching of digital services, digital information references, information literacy education in digital environment, etc.. The design of DL curriculums based on precise teaching purposes can train up a new generation of librarians who possess professional knowledge and be better equiped in the future library and information services.

ICT, DL, and the topics and issues about related service and management need to be planned carefully in the curriculum design so that the required skills in library and information services can be emphasized. The DL courses and teaching materials should not just stay on the level of architecture or technology.

This paper meant to call peer's attention to how to seamlessly integrate technology and the subjects of digital services and management to the curriculum design.

Note

This paper was rewrited from the 2010, the 10th Cross-Strait Symposium on Library and Information Science.

Acknowledgements

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