結合能力指標並符合 SCORM 1.3 之適性化網路學習平台設計與開發
The Design and Implementation of an Adaptive Learning Management
System based on SCORM 1.3 and Competence Indicators

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摘　　　要

　　目前網路學習平台大部分未遵循共通的標準，所以教學資源無法互相交流共享，本研究嘗試設計一符合 SCORM 1.3 標準之網路學習管理平台，並加入九年一貫課程各學習領域能力指標之功能，且能支援追蹤學習者的學習歷程記錄，適合個別化的學習需求。

　　本研究依據上述之功能，設計一個網路學習管理平台，其主要的特點如下：
(1) 本系統符合 SCORM 1.3 之 LMS-CAM、LMS-RTE 和 LMS-SN 三種等級。
(2) 本系統支援九年一貫能力指標之功能。
(3) 教師透過本系統可以很容易上傳、管理與共享符合 SCORM 1.3 規範的教材。
(4) 教師可以利用本系統提供的教材 Metadata 著錄功能，真正的達到教材的共享性與再用性。
(5) 藉由本系統所記錄的學生學習歷程及學習進度等資料，除了可以做為學生學習的參照外，更可提供教師了解學生的學習特性與學習過程。
(6) 本系統所提供的適性學習功能，確能依據學生的學習狀態和測驗結果，導引到適合的教材，達到適性學習的需求。

關鍵字：能力指標、SCORM、適性學習、網路學習管理平台

The Design and Implementation of an Adaptive Learning Management System based on SCORM 1.3 and Competence Indicators

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Abstract

After the 'Grade 1-9 Curriculum Guidelines' was announced by the Ministry of Education (MOE) and the "Information Technology Education" (ITE) was defined and emphasized to integrate related curriculum subjects, teachers are asked to produce a multitude of digital teaching curriculum. However, both the current web-based instruction system and the format for teaching content representation has not yet been standardized that makes the teaching curriculum sharing or exchanging becomes difficulty.

The objective of this study is to design and implement a web-based instruction platform system that is SCROM 1.3.2 standard conformance. Also, various web-based subsystems that can used to compose a SCORM 1.3.2 conformance curriculum (designed and implemented by the other team member) are integrated into the proposed teaching and learning platform system. Specifically, the proposed platform system supports the different learning styles and different adaptive instructional strategies for learners to achieve adaptive navigation based on the SCORM 1.3.2 sequencing rules. Other characteristics and features supported in this platform system include:

(1) The system conforms to three levels of the SCORM 1.3 after the conformance testing, including LMS-CAM, LMS-RTE and LMS-SN.

(2) The system provides the competence indicators management for the digital curriculum in the primary school.

(3) The system supports the features for making digital content reusable and sharable.

(4) A learning portfolio feature is designed and implemented in the platform system that allows instructors to understand the learners' learning processes and behaviors.

(5) The system offers the management function of adaptive learning, so it can provide the suitable content for the learner according to their learning status and learning performance.

Keywords：Competence Indicators, SCORM, Adaptive Learning, Web-based Learning Management System

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目錄

表目錄

圖目錄

一、緒論

1.1 研究動機

　　面對資訊、知識創新的二十一世紀，許多國家都提出教育改革的計畫，我國的創新教學九年一貫課程，其目的都在培養學生二十一世紀成功生活所須具備的能力和技能。而九年一貫課程已於民國九十年九月正式實施，其課程的規劃共分為七大領域六大議題，各領域再參照該學習領域之知識結構及學習心理之連續發展原則而劃分，每一階段均有其能力指標，九年一貫課程的改革方向不同於以往分科分冊的方式，改為將整個九年學習過程做一整體性考量。九年一貫課程的實行，有一重要政策為資訊融入各科教學，中小學資訊教育總藍圖的願景中亦提到，將資訊科技融入各科教學，使學習管道多元化，學習資源更為寬廣而豐富，增加學習的深度與廣度，提昇學習的興趣，並可配合學生的需要，讓學生自主學習[1]。

　　另外網路學習和傳統學習本質上都是學習，不同的是網路學習是一種利用網路媒體，擺脫時空的限制，將設計好的教材，傳遞給學習者的過程。而網路學習的優勢，除了學習不再受時、空的限制之外，就是它能實現教材資源共享（Sharing）或教材的「重複使用性」（Reusability）。廣義的教育資源包括二個主要集合，即：(1)教材資源的提供者（Content Provider）與(2)學習環境的管理。前者包括如：教師與廠商等所產出學習教材物件；而後者則包括了學習者的學習記錄、學籍教務等與路教學播放環境。網路教學資源是開展網路學習的前提和基礎，只有具備內容豐富、優質實用的網路教材資源庫，各種網路學習應用系統才能真正發揮現代教育技術的威力[2]。

　　而由美國國防部與白宮科技委員會聯合推動之 ADL 計畫中的 SCORM（Sharable Content Object Reference Model）標準，正可以達成教材的重用與共享。因此本研究將設計「結合能力指標並符合 SCORM 1.3 之適性化網路學

習平台」，希望以教材重用與共享之機制建立一套學習平台之共通介，達成降低課程設計成本與時間，並能支援追蹤學生歷程記錄，適合個別化學習之需求。

1.2 研究目的

本研究主要目的在設計並實作出適合九年一貫課程能力指標導向，與符合 SCORM 1.3 標準規範之教材上傳與共享及支援適性化學習之機制，其主要特點如下：

1、結合九年一貫能力指標

九年一貫課程的規畫中，各學習領域與學習階段皆有其所要學習的能力指標，且能力指標是九年一貫課程的精神內涵，所以在設計課程教材時應考量能力指標的加入，如此教師可依據能力指標來擬定學習目標、設計教學活動、及實施教學評量。

2、支援適性化學習

適性化網路教學系統可以提供學生自我學習功能，依據學生的學習進度及學習歷程記錄，自動導引到不同的課程內容，以符合學生個別化的能力差異。

3、符合 SCORM 1.3 學習管理平台標準

現有之網路教學資源都是相互獨立的網站，資源無法分享共用，唯有依循國際標準之學習平台，才能符合不同環境和各種教學情境需求，讓教師設計的教材相互交流共享，提昇教材重用性。

1.3 章節概要

本論文共分五個章節，其內容簡述如下：

第一章「緒論」，說明本論文研究機動的描述與希望達成之研究目的，並對論文章節做簡單的介紹。

第二章「相關文獻探討」，探討與本研究相關的背景知識與文獻，如九年一貫課程的規畫及能力指標的訂定、適性學習相關理論、SCORM 1.3 標準，及網路學習平台的探討，作為後續分析設計之參考。

第三章「系統分析與設計」，依據本研究提出的系統需求，提出系統的架構並作細部的功能分析及設計流程，規劃出一功能完整的網路學習管理平台。

第四章「系統建置與實作」，本系統設計採用 MVC 模式來建置，並依前一章節的分析實作出系統的相關功能，包含使用者權限管理、功能選單編輯、適性學習導覽、學習歷程瀏覽、SCORM 教材上傳、教材 Meta-data 著錄、SCORM 教材搜尋、能力指標維護等。

第五章「系統評估與結論」，利用 ADL SCORM Conformance Test Suite 驗證本系統為符合 SCORM 1.3 標準之學習管理平台，並對本論文做完整的總結，及提出未來的發展方向。

二、相關文獻探討

2.1 九年一貫及能力指標

為迎接二十一世紀的來臨與世界各國之教改脈動，教育部依據行政院核定之「教育改革行動方案」，進行國民教育階段之課程與教學革新，以九年一貫課程之規劃與實施為首務。而教育之目的以培養人民健全人格、民主素養、法治觀念、人文涵養、強健體魄及思考、判斷與創造能力，使其成為具有國家意識與國際視野之現代國民。因此，跨世紀的九年一貫新課程應該培養具備人本情懷、統整能力、民主素養、鄉土與國際意識，以及能進行終身學習之健全國民[3]。

九年一貫課程是以生活為中心，配合學生身心能力發展歷程；尊重個性發展，激發個人潛能；涵泳民主素養，尊重多元文化價值；培養科學知能，適應現代生活需要。為實現國民教育目的，須引導學生致力達成下列課程目標：

一、增進自我了解，發展個人潛能。

二、培養欣賞、表現、審美及創作能力。

三、提升生涯規劃與終身學習能力。

四、培養表達、溝通和分享的知能。

五、發展尊重他人、關懷社會、增進團隊合作。

六、促進文化學習與國際了解。

七、增進規劃、組織與實踐的知能。

八、運用科技與資訊的能力。

九、激發主動探索和研究的精神。

十、培養獨立思考與解決問題的能力。

為達成上述課程目標，國民教育階段的課程設計應以學生為主體，以生

活經驗為重心，培養現代國民所需的基本能力，共十項。

一、了解自我與發展潛能。

二、欣賞、表現與創新。

三、生涯規劃與終身學習。

四、表達、溝通與分享。

五、尊重、關懷與團隊合作。

六、文化學習與國際了解。

七、規劃、組織與實踐。

八、運用科技與資訊。

九、主動探索與研究。

十、獨立思考與解決問題。

在學習領域方面，為培養國民應具備之基本能力，國民教育階段之課程應以個體發展、社會文化及自然環境等三個面向，提供語文、健康與體育、社會、藝術與人文、數學、自然與生活科技及綜合活動等七大學習領域。除了七大學習領域外，因應社會環境所需，另外訂定了六項重大議題：資訊教育、環境教育、兩性教育、人權教育、生涯發展教育及家政教育。這六大議題在編排課程時，並不單獨編排，而是將相關內容融入七大學習領域中教學。

九年一貫課程各學習領域學習階段係參照該學習領域之知識結構及學習心理之連續發展原則而劃分，每一階段均有其能力指標。茲將各學習領域階段劃分情形說明如下表：

表 1 九年一貫課程劃分表

	一	二	三	四	五	六	七	八	九
語文	本國語文			本國語文			本國語文		
					英語		英語		
健康與體育	健康與體育			健康與體育			健康與體育		
數學	數學			數學		數學		數學	
社會	生活			社會		社會		社會	
藝術與人文				藝術與人文		藝術與人文		藝術與人文	
自然與生活科技				自然與生活科技		自然與生活科技		自然與生活科技	
綜合活動	綜合活動			綜合活動		綜合活動		綜合活動	

一、語文學習領域：

　　1.　本國語文：分為三階段，第一階段為一至三年級、第二階段為四至六年級、第三階段為七至九年級。

　　2.　英語：分為兩階段，第一階段為五至六年級、第二階段為七至九年級。

二、健康與體育學習領域：分為三階段，第一階段為一至三年級、第二階段為四至六年級、第三階段為七至九年級。

三、數學學習領域：分為四階段，第一階段為一至三年級、第二階段為四至五年級、第三階段為六至七年級、第四階段為八至九年級。

四、社會學習領域：分為四階段，第一階段為一至二年級、第二階段為三至四年級、第三階段為五至六年級、第四階段為七至九年級。

五、藝術與人文學習領域：分為四階段，第一階段為一至二年級、第二階段為三至四年級、第三階段為五至六年級、第四階段為七至九年級。

六、自然與生活科技學習領域：分為四階段，第一階段為一至二年級、第二階段為三至四年級、第三階段為五至六年級、第四階段為七至九年級。

七、綜合活動學習領域：分為四階段，第一階段為一至二年級、第二階

段為三至四年級、第三階段為五至六年級、第四階段為七至九年級。

八、生活課程：一至二年級社會、藝術與人文、自然與生活科技學習領
　　域統合為生活課程。

　　劃分好學習領域與階段後，再依各領域各學習階段訂定其所要學習與具
備的能力指標，以自然與生活科技為例，自然與生活科技共分為四個學習階
段，每一個能力指標由四碼的編號所組成：a-b-c-d

　　「a」代表主項目序號,「b」代表學習階段序號,「c」代表次項目序號,「d」
代表流水號。

　　例如自然與生活科技能力指標 2-3-4-1：長期觀測，發現太陽升落方位(或
最大高度角)在改變，在夜晚同一時間，四季的星象也不同，但它們有年度的
規律變化。

　　第一碼 2：代表主項目序號，2 為科學與技術認知。
　　第二碼 3：代表學習階段，第 3 學習階段為國小五～六年級。
　　第三碼 4：代表項目序號，4 為認識環境。
　　第四碼 1：代表能力指標的流水號。

2.2 適性化學習

　　適性學習的定義來自於教育機會均等理念的延伸。教育機會均等的理念
是提供每一位學生適性教育（adaptive education）的機會，讓每個學習者在學
習過程中，不會因為各種先天的條件和後天的環境而造成學習上的不平等現
象。適性學習的理念，最早源於孔子的因材施教和蘇格拉底的詰問法，針對
不同的學生所提出的問題和回饋的內容因人而異，教師對學生的期望因不同
的對象、不同的情境而有不同的表現[4]。

布魯姆認為適性教學是依據學習者在學習方面的性向，決定每個學生所需要的學習時間和精熟水準，教師可以針對各種教學變項、學習的機會及教學品質加以控制，讓每位學生都能達到事先擬定的學習目標[5]。

蓋矗和布里格更進一步指出，適性學習主要在於符合個別化的學習，其特色如下[6]：

(1)教師本身提供較少的教學活動。

(2)教材本身提供較多的活動。

(3)教師在教學歷程中的時間較自由，因而有更多的機會進行個別指導，決定個別學生應該學那些或如何進行學習；教師同時擁有更多的時間仔細地觀察學生的記錄，以從事學習困難的診斷和補救教學工作。

(4)教師要給學生更多的機會選擇和決定自己的學習內容，要學些什麼、如何學、用什麼教材學習。

(5)學生可以依據自己的進度學習，取代所有學生以同一進度學習。

因此利用網路學習系統提供學生學習是較可行的方案，因為網路學習系統除了可以記錄學生的測驗成績外，還可以記錄學生的學習歷程，由學生的學習歷程中教師可以了解學生的學習時間與學習特質，進而協助學生學習，適性化的網路教學系統尚可為每位學生提供不同的學習進度，符合個別化能力的差異，而不至於導至學習者的挫折感[7]。

而適性化網路學習的意義是利用網路教學系統提供學生自我學習功能，依據學習者的學習進度，提供不同的課程內容，以符合個別化能力的差異。因此網站要能夠依據使用者瀏覽的行為能夠自動地改進網站的組織結構和呈現方式[8]。

Brusilovsky[9]將網路學習系統適性化分為以下兩種：

(1)適性呈現(Adaptive presentation)：將教材以小單元知識組合而成。

(2)適性導航(Adaptive navigation support)：根據使用者模型來調整超媒體的連結及內容。

他認為適性導航的目的就是希望根據使用者的學習目標、認知層次和學習特質，找出適合使用者在 WWW 上的瀏覽路徑。

2.3 SCORM 1.3 標準

SCORM (Sharable Content Object Reference Model) 是由美國國防部所提出的「先進分散學習計畫」（Advanced Distributed Learning, ADL）中所提出的網路教學平台及課程物件結構標準。希望以教材重用與共享之機制建立一套學習平台之共通介面，達成降低課程設計成本與時間，並能支援追蹤學習歷程記錄，適合個別化的教學之需求。其主要的特點如下[10]：

Accessibility：學習者可以在任何時間、任何地點獲取適當的學習內容。

Adaptability：可根據學習者的學習情況調整學習內容。

Affordability：要以最節省成本的方式建立教材。

Durability：當系統提升或改變時，不需重新修改程式或教材。

Interoperability：教材可以在任何教學平台上使用。

Reusability：在不同的環境下，學習內容可以重複使用。

SCORM 1.3 的規格架構書內容可分為四大部分，如下圖：
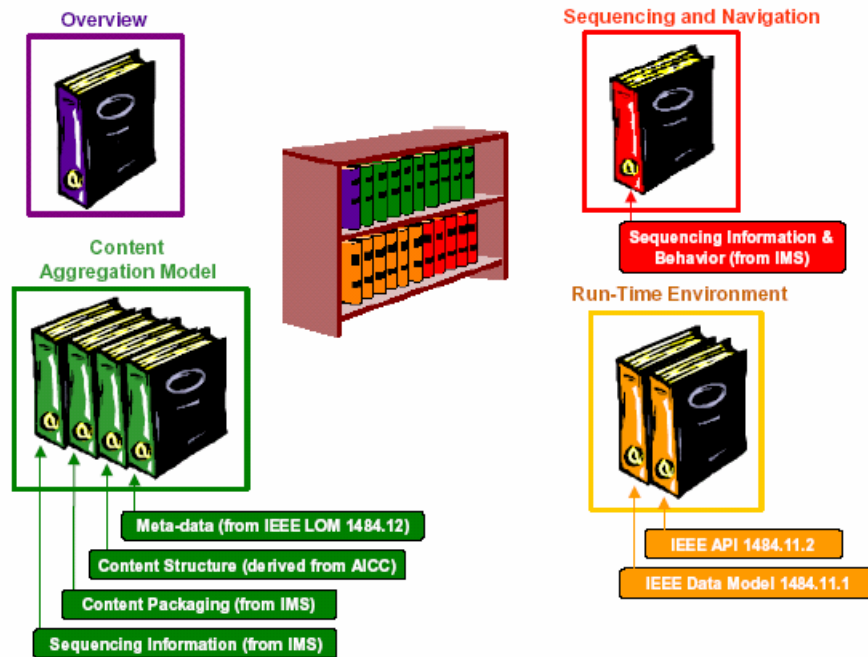
圖 1 SCORM 架構圖

（資料來源：www.adlnet.org）

1. Overview（SCORM 1.3 簡介）

2. Content Aggregation Model（教材內容整合模式，CAM）

3. Run-Time Environment（執行環境，RTE）

4. Sequencing and Navigation（教材順序與導覽，SN）

除了第一本 Overview 說明 SCORM 的緣起及制定目標，並簡單對 SCORM 整體架構作一介紹外，其餘三本分述如下。

2.3.1 教材內容整合模式（**CAM**）

教材內容整合模式（Content Aggregation Model, CAM）是提供教學的設計者及製作者一個方法來聚集教學資源，每個學習資源都代表一個學習者的經驗，建立和組成這些單一學習經驗以組成為更複雜的學習資源。這些學習

資源能夠被預先定義好的呈現順序來架構完成，以便傳遞給學習者。CAM 是以 XML 格式為基礎，並定義出課程內所有的學習元件、課程架構以及外在學習資源指引[11]。CAM 包含了四個主題：（1）Content Model：定義組成課程結構的物件；（2）Content Packaging：定義課程結構和描述如何包裝學習資源；（3）Meta-data：描述教材的資訊，可進一步管理教材資源；（4）Sequencing and Presentation：定義學習資源呈現的順序。

（1）Content Model

Content Model 包含三種學習物件：Asset、SCO、Content Organization。

Asset：它是組成學習內容最基本的物件，例如：WAV Audio、Image、Web Page。
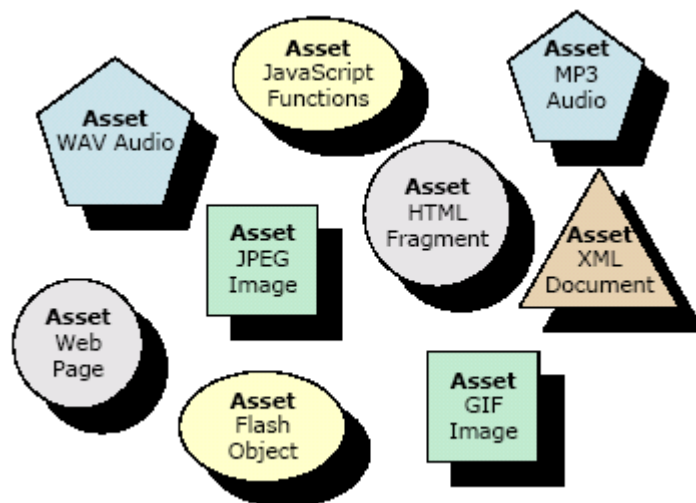
圖 2 SCORM 的 Asset 範例
（資料來源：www.adlnet.org）

Sharable Content Object（SCO）：由一個或多個 Assets 組成，可透過 API 和 LSM 溝通。
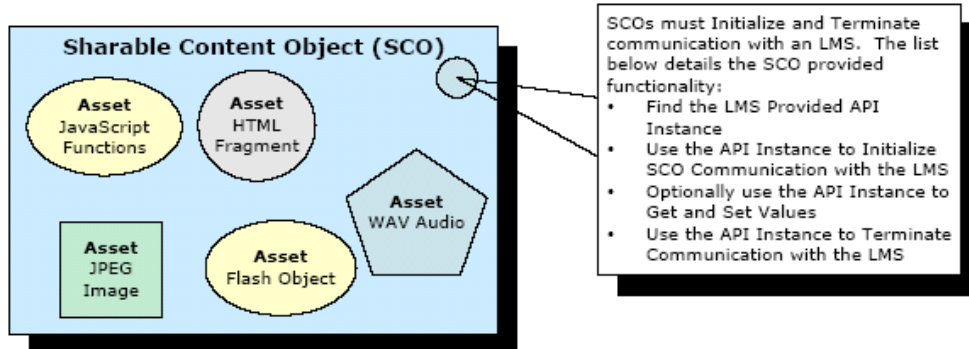
圖 3 SCORM 的 SCO 範例

（資料來源：www.adlnet.org）

Content Organization：它定義教材內容的結構，包含許多 Asset、SCO 等學習物件，成為有意義的學習單元。
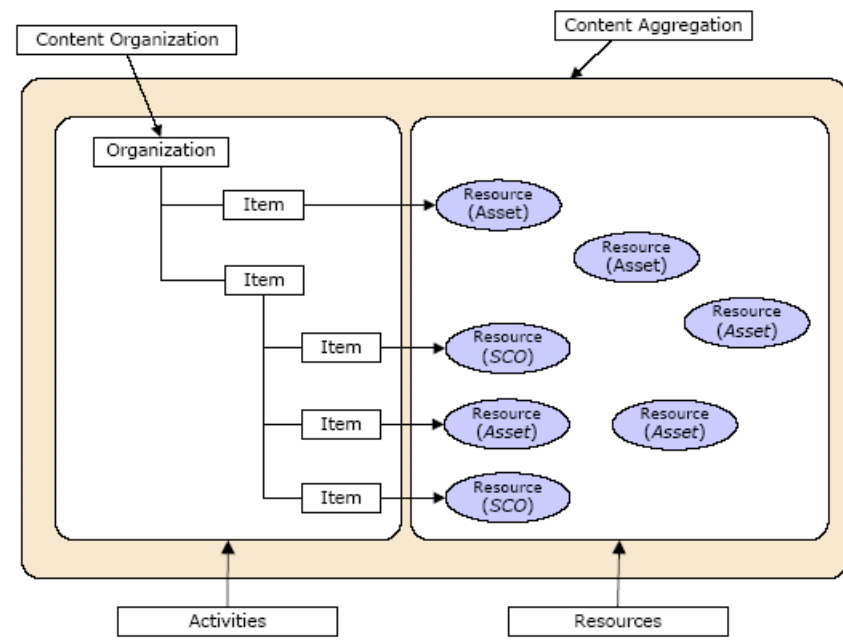
圖 4 SCORM 課程架構

（資料來源：www.adlnet.org）

（2）Content Packaging

Content Packaging 提供一個標準化的方式來在不同系統和工具間交換數位學習資源，它提供一個共同的輸入、輸出格式讓所有的學習管理平台系統都可利用此介面來和學習資源作溝通。一個包裝好的學習資源是一個獨立的

個體，也就是說當包裝好的學習資源拆解開之後，裡面必須含有足夠的資訊以便能夠被學習管理平台所充分使用，而成為被每位學習者所使用到的學習資源[12]。
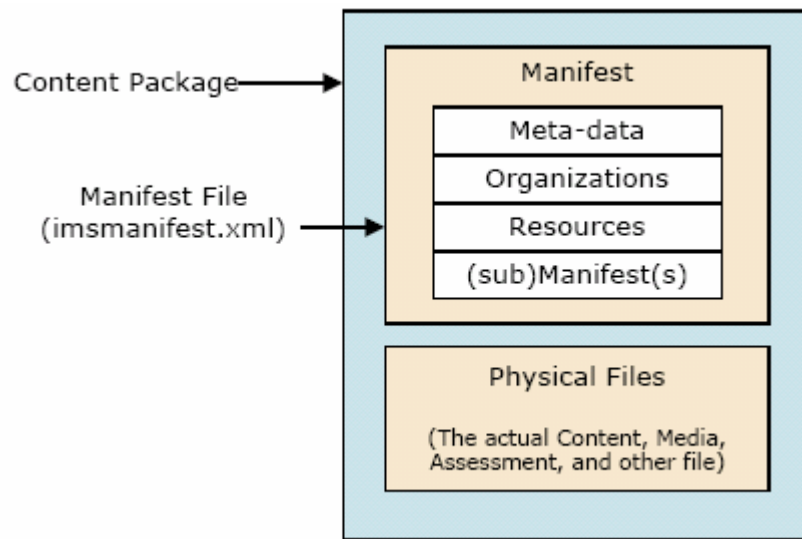
圖 5 課程包裹概念圖
（資料來源：www.adlnet.org）

（3）Meta-data

Meta-data 是指描述資料的資料而言，也就是「data about data」，此處則指描述學習元件的資料，包括 Asset、SCO、Content Organization 都可用 Meta-data 來加以描述。SCORM 共定義了九大類的 Meta-data，如下：

General：描述學習物件的一般訊息。

Lifecycle：描述學習物件的歷史和現在的狀態。

Meta-Metadata：描述學習物件的 Metadata。

Technical：描述學習物件所需的技術及特性。

Educational：描述學習物件在教育方面的特性。

Rights：描述學習物件的智慧財產權和使用的條件。

13

Relatoin：描述學習物件間的關係。

Annotation：描述學習物件的註解。

Classification：描述學習物件在分級系統中的位置。

為了發揮學習資源再利用的最高效果，最好能讓電腦系統自動揀選學習元件，此時電腦就必須靠 Meta-data 來作判讀與分析，以發現、過濾、篩選出合適的學習元件來組合成課程，所以 Meta-data 與學習元件兩者間是共存共榮的關係。另外為了讓學習者可以透過「搜尋」的功能，尋找適合學習者自己學習的教材，或是找尋解決相關問題所需要的相關知識，都可以透過 Meta-data 這樣詳盡的分類，而建立起強大的搜尋條件[12]。

（4）Sequencing and Presentation

Sequencing and Presentation 定義學習教材呈現的順序，利用 IMS Manifest 對學習活動定義相關的順序規則，描述各章節之間的串連關係，提供一個學習順序的機制，學習者在平台上學習時，即是根據這個學習順序來依序瀏覽教材。
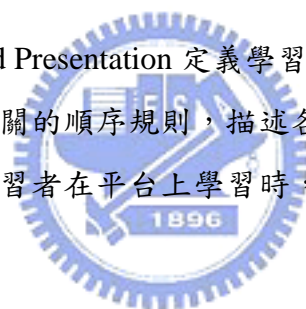
2.3.2 執行環境（**RTE**）

執行環境（Run-Time Environment, RTE）的目的是要讓不同廠商所製作的學習內容，都能被不同的學習管理平台使用。在這樣的要求下，SCORM 的執行環境分別針對課程物件的啟動（Launch）、應用程式介面（Application Program Interface, API）與資料模式（Data Model）做出規範，其運作流程如下圖[13]：

14
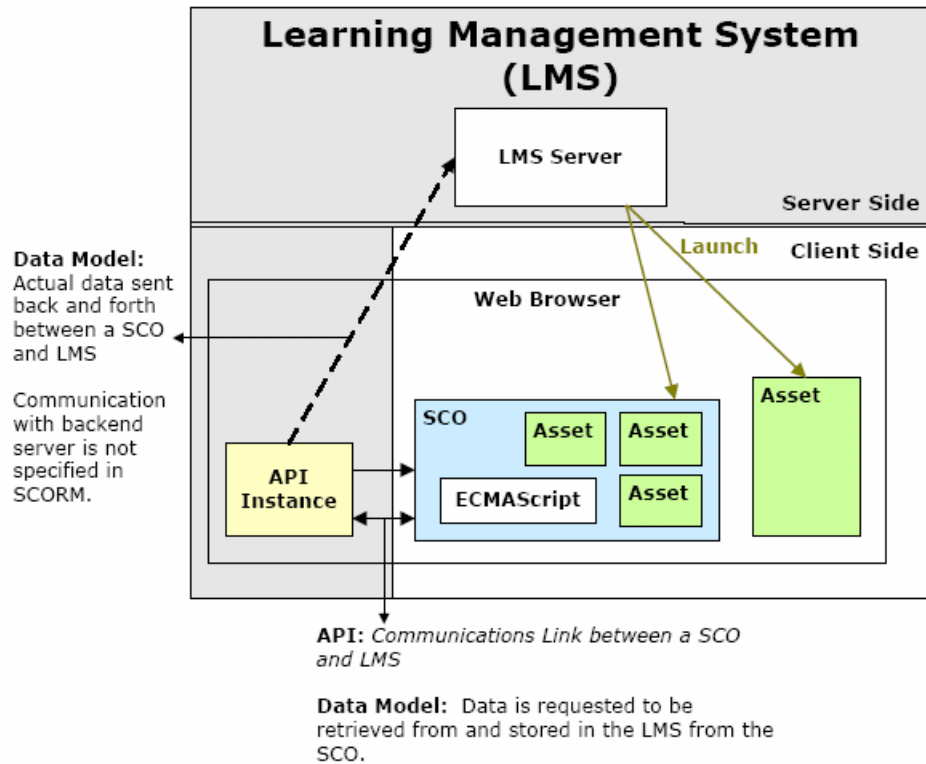
圖 6 SCORM 的執行環境概念圖

（資料來源：www.adlnet.org）

（1）啟動（Launch）

　　啟動的機制是要讓 LMS 可以依照特定的條件啟動 SCO，LMS 可以根據課程包裝中所定義的順序、學習者的指示、或是學習者的學習狀況而啟動課程。
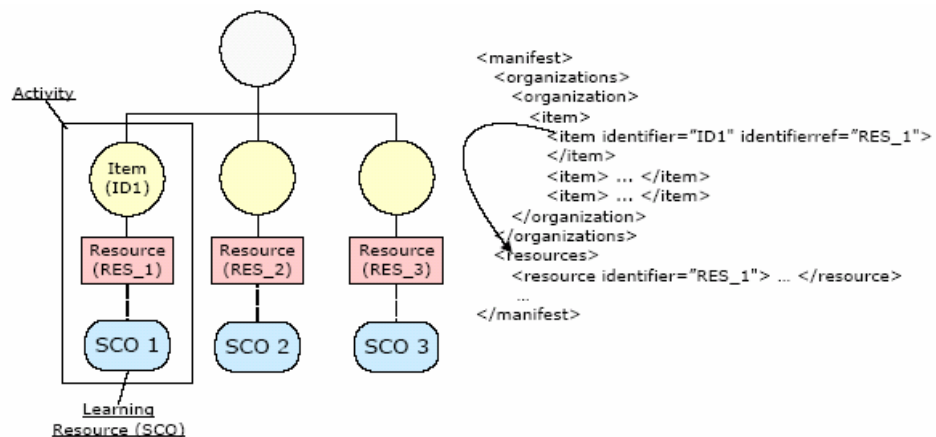
圖 7 啟動學習物件

（資料來源：www.adlnet.org）

（2）應用程式介面（API）

　　API 提供 SCO 與 LMS 一個標準化的溝通方式，由 SCORM 所定義的 API Function 有 8 個（如下圖），藉由共通的 API，可以達到 SCORM 對互通性與再用性的要求。
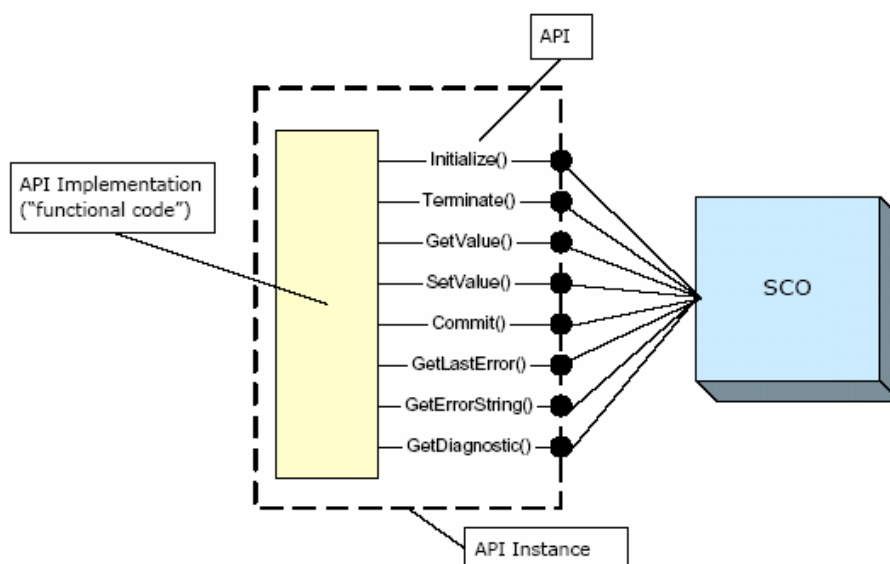
圖 8 SCORM 的 8 個 API Function
（資料來源：www.adlnet.org）

● Session Methods

　　✧ Initialize( )：SCO 作初始化的動作。

　　✧ Terminate( )：當學習課程結束時，SCO 呼叫此 API 通知 LMS。

● Data-transfer Methods

　　✧ GetValue( )：SCO 可以透過此 API 從學習管理系統中取得對應的 data model 的資訊。

　　✧ SetValue( )：此 API 可以將使用者與課程的資訊，利用 data model 的格式傳送到 LMS。

　　✧ Commit( )：SCO 呼叫 SetValue( )時，只是作暫存動作，當執行 Commit( )時才真正將資料寫入系統中。

16

● Support Methods

✧ GetLastError( )：SCO 呼叫 GetLastError()，學習管理平台會傳回上一次發生錯誤之代碼。

✧ GetErrorString( )：當有錯誤發生時由 GetLastError()取得之錯誤代碼，可利用此 API 取得錯誤之詳細描述。

✧ GetDiagonstic( )：此 API 可讓系統設計者針對其特殊之偵測需求回傳對應之訊息。

（3）資料模式（Data Model）

由於 LMS 和 SCO 之間是互相獨立的，因此必須事先定義資料的模式，才可以使兩者間交換與傳遞資料，而 Data Model 就是 LMS 和 SCO 在傳送資料時的共同格式，學習管理平台可以透過 API 來取得或設定學生的學習歷程紀錄。
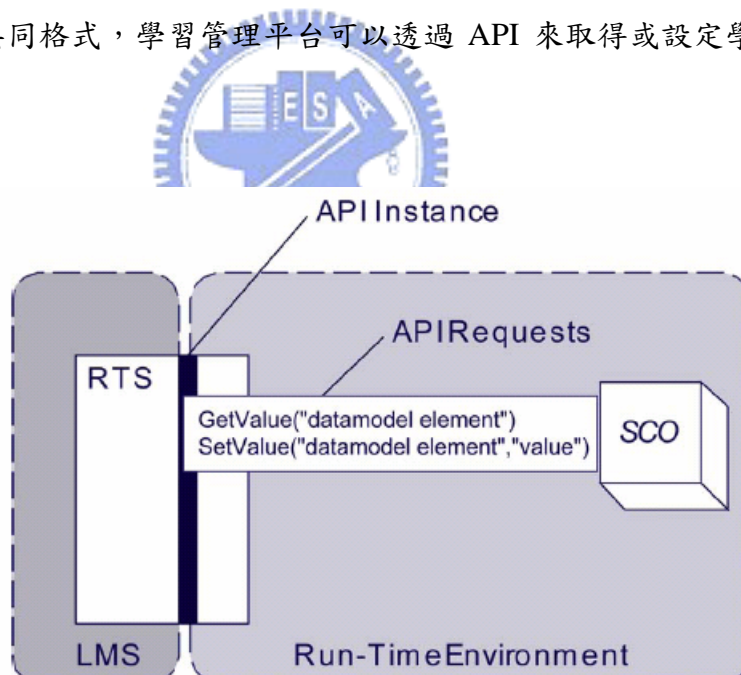
圖 9 透過 API 來存取 Data Model
（資料來源：www.adlnet.org）

2.3.3 教材順序與導覽（**SN**）

教材順序與導覽（Sequencing and Navigation, SN）是 SCORM 1.3 所新定的規格，它是基於 IMS 的「簡單順序安排規格」（IMS Simple Sequencing Specification）所制定的。在 IMS 的簡單順序安排規格中定義了一些方法來呈現設計者所要表達的學習經驗，藉此，「學習管理系統」可以前後一致地安排一連串的學習活動片段。因此，學習活動的設計者或課程的開發者可以定義好一個課程的相關順序，用來將 SCO 或 SCA 的課程內容呈現給學習者，而在這樣的情境下，學習者可以自由地選擇、瀏覽、或是略過教材的某一個部份，而讓學習者可以各取所需地去進行學習活動[14]。

教材順序與導覽是利用 IMS Manifest 對學習活動定義相關的順序規則，描述各章節之間的串連關系，SCORM 1.3 規範中提供 8 大類有關 Sequencing 的語法分述如下[15, 16]：

<sequencing>屬於根標籤，主要用於嵌入所有相關的順序規則和學習活動策略上。用於所以的<Item>或<organization>標籤內，其下元素有：

● <ControlMode>：描述有關學習順序控制模式的資訊，可設定教材章節的流程。

● <sequencingRules>：描述有關每個學習順序活動中的規則，可設定各個教材章節的條件及行為。

● <limitConditions>：描述作用於此學習活動順序與傳送的限制，可設定章節的閱讀限制條件。

● <auxilaryResources>：描述此學習活動相關的資源，可設定教材章節的輔助教材。

● <roolupRules>：描述此學習活動要 rooled up 時的相關資訊，可設定子章節與父章節之學習狀態之間的關係。

● <objectives>：描述此學習物件相關的學習活動目標，可設定章節的學習目標。

- <randomizationControls>：描述有關學習活動順序呈現時的排序方式，可設定教材章節是否隨機出現。

- <deliveryControls>：描述有關學習活動被 activity 傳送時的控制動作，可設定是否記錄章節的學習狀態。

2.4 網路學習平台探討

SCORM 1.3 中提出了一個完整的學習管理系統(Learning Management System, LMS)應具備傳送、管理教學內容、追蹤、報告學習者進度和互動情況等機制。下圖是 SCORM 提出的學習管理系統功能架構圖[10]，此系統提供七項服務機制[17]：
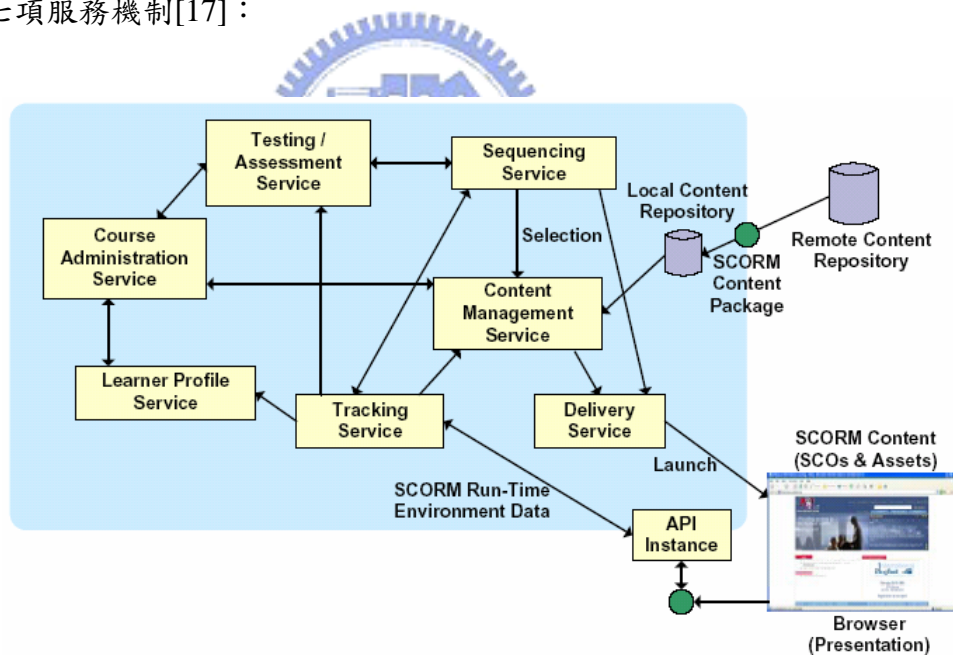
圖 10 學習管理平台架構
（資料來源：www.adlnet.org）

(1)測驗/評量服務(Testing/Assessment Service)： 此功能負責管理測驗及評量的題庫，並提供測驗或評量給內容管理服務與傳送服務，將教學內容傳送給學習者。

(2)課程管理服務(Course Administration Service)：提供教學者製作課程及管理課程等功能。

(3)學習者檔案服務(Learner Profiles Service)：此功能則記錄了每個學習者的個人資訊，如帳號、密碼、選修的課程、成績及學習日期時間等資訊。

(4)順序服務(Sequencing Service)：此功能負責讀入含有教學順序定義的教學清單，依教學所定義的順序，選出適當的教學內容，告訴內容管理服務與傳送服務，將教學內容傳送給學習者。

(5)內容管理服務(Content Management Service)：此功能負責提供教材的管理，如新增、刪除、編輯及查詢等管理教材功能。

(6)追蹤服務(Tracking Service)：此功能負責抓取學習者與學習管理系統互動時的一些資訊，如學習時間、次數、進度及成績等，提供給順序服務與內容管理服務決定出適當的學習內容給學習者。

(7) 傳送服務(Delivery Service)：負責把決定好要傳送的教學內容傳給學習者。

三、系統分析與設計

3.1 系統需求

根據九年一貫課程規劃及適性學習需求,我們結合網路學習標準 SCORM 1.3 的規範,整理出學習平台應具備的功能需求:

1、單元教材管理

    (1)教材以小單元呈現。

    (2)教材可以由各種多媒體教材製作工具編輯完後上傳。

    (3)教材可依七大領域、能力指標搜尋呈現。

    (4)教師可依上課所需使用教材組合成一大單元課程。

    (5)教師可因應教材的變動性,隨時增、刪教材。

    (6)教師可彈性架構一課程結構內所有教材的學習階層。

2、SCORM 課程管理

    (1)教師可以上傳由各種多媒體教材製作工具編輯完成並符合 SCORM 1.3 標準的課程包裹。

    (2)教師可因應教材的變動性,隨時增、刪課程。

3、適性學習管理

    (1)學生可依自己的學習能力,適性學習。

    (2)系統記錄學生學習歷程,可供學生瀏覽、教師分析學生學習行為。

4、系統管理

    (1)系統可線上增、刪使用者,並進行權限的設定。

    (2)系統可依不同使用者的權限,設定其所看到的選單,也就是不同的使用者登入會看到不同的功能畫面。

(3)九年一貫中七大領域能力指標維護、管理、搜尋。

(4)單元教材或 SCORM 課程的 Metadata 維護、管理、搜尋。

(5)教材共享功能。

5、上傳功能

(1)單元教材、SCORM 課程及試題的上傳功能。

3.2 系統分析

依據系統的功能需求，我們繪出結合能力指標並符合 SCORM 1.3 之適性化網路學習平台的架構圖如下，
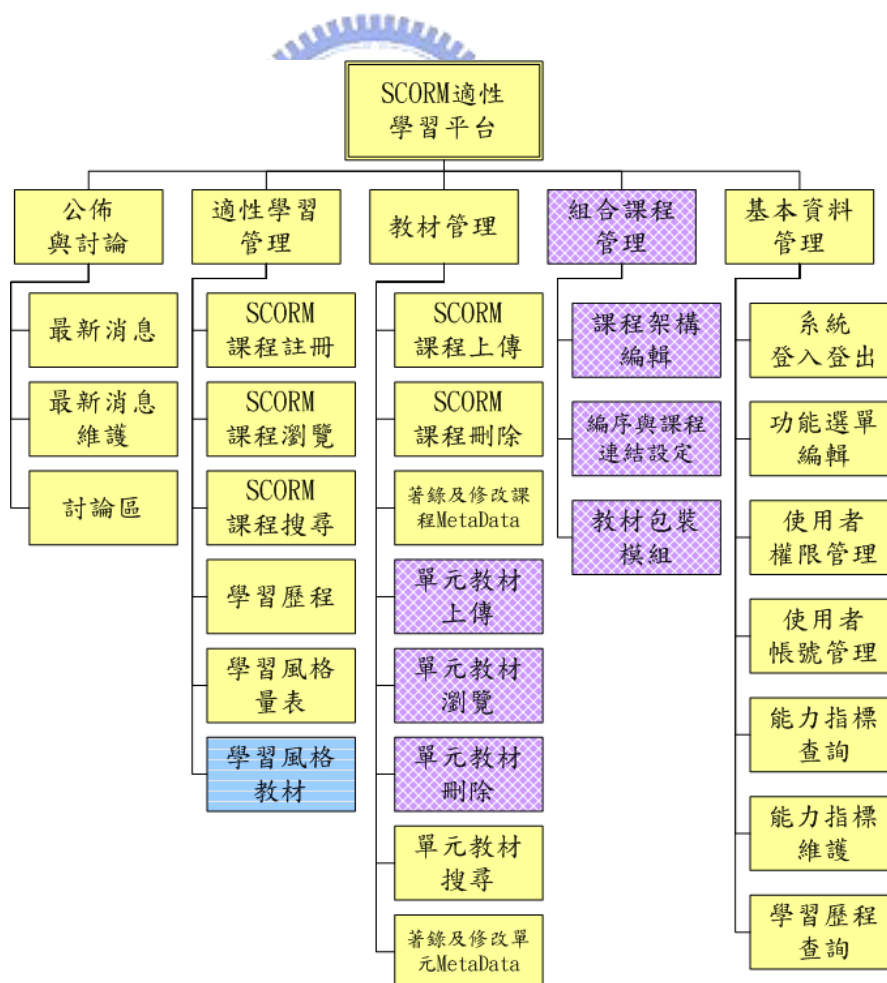
圖 11 系統架構圖

系統主要功能歸類如下：

一、公佈與討論

系統提供最新消息的公佈與維護，並開設討論區讓學生能在線上發問及討論，老師也可透過討論區中學生發問情形了解學生的學習情形。

二、適性學習管理

在適性學習管理模組中，學生可以註冊並瀏覽想要學習的課程，亦可透過 Metadata 來搜尋 SCORM 課程，並可在學習歷程中查看自己的學習狀況，包括學習的時間、次數及做答的情形。

三、教材管理

在教材管理模組中，教師可以上傳及維護 SCORM 課程，或是單元教材，並可利用 Metadata 的著錄功能進行課程或單元教材的著錄，以方便後的課程搜尋或課程組合。

四、組合課程管理

在組合課程管理模組中，教師可以建立課程架構，並加入教學策略，組合成符合 SCORM 的課程，讓學生能依據教師設計的教學策略進行線上學習。

五、基本資料管理

在基本資料管理模組中，系統管理者可以管理使用群組（學生、教師、系統管理者）的帳號及權限，並可隨時線上編輯功能選單，另外還提供教師進行能力指標的維護及學生學習歷程的查詢。

3.3 系統設計

以下針對本系統所需之系統權限控、學生適性學習、學習時間及狀態值、SCORM 教材上傳、教材 Meta-data 著錄等功能為例，說明本系統的設計流程。

3.3.1 系統權限控管

本系統的使用者分為學生、教師、系統管理者等三種不同身份，系統依不同使用者設定不同使用權限，也就是說，不同權限的使用者所看到的主選單及選項都因權限而不同，使用者在登入時，系統會依資料庫內的身分屬性作不同的權限控管，下圖為系統登入的程式設計流程。
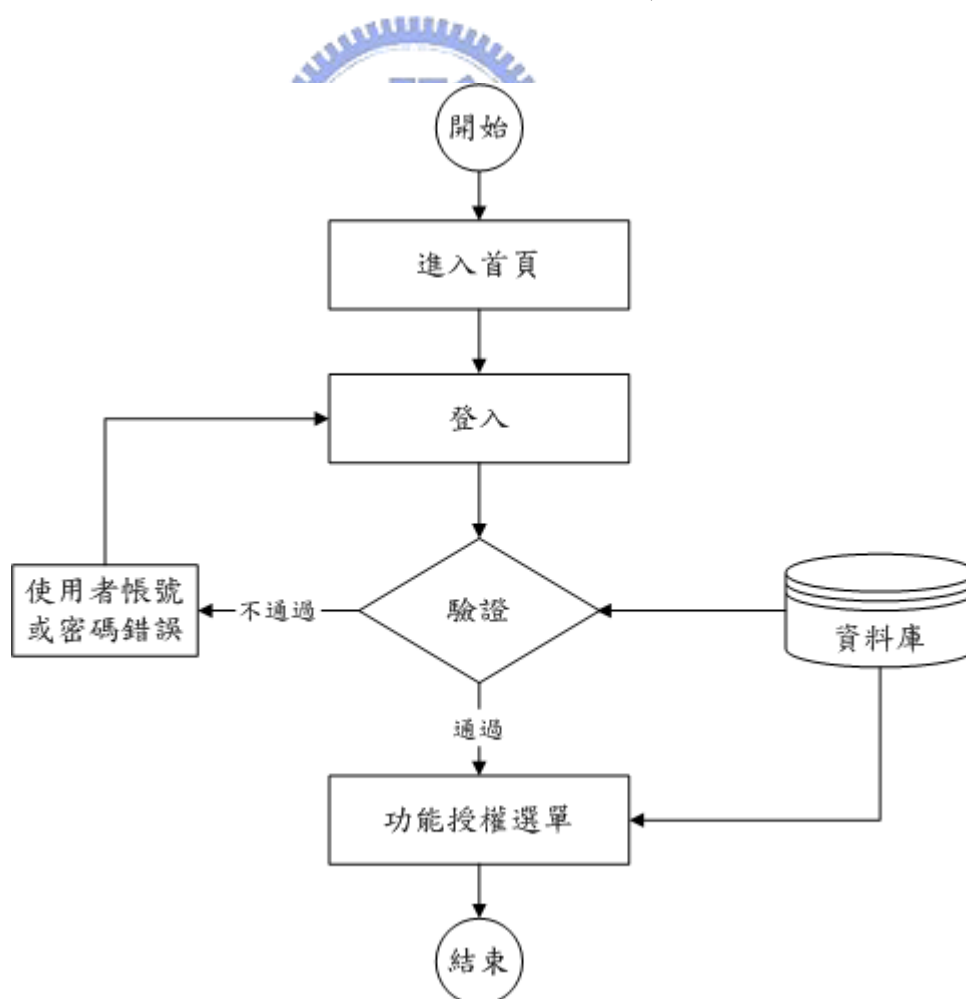
圖 12 系統登入流程圖

不同使者用的權限設定如下：

1、學生：

公佈與討論：最新消息、討論區

適性學習管理：SCORM 課程註冊、SCORM 課程瀏覽、SCORM 課程搜尋、學習歷程、學習風格量表

2、教師：

公佈與討論：最新消息維護、討論區

教材管理：SCORM 課程上傳、SCORM 課程刪除、著錄及修改課程 Metadata、單元教材上傳、單元教材瀏覽、單元教材刪除、單元教材搜尋、著錄及修改單元教材 Metadata。

組合課程管理：課程架構編輯、編序與課程連結設定、教材包裝模組

基本資料管理：能力指標查詢及維護、學生學習歷程查詢

3、系統管理者：

公佈與討論：最新消息維護

基本資料管理：功能選單編輯、使用者權限管理、能力指標維護

3.3.2 學生適性學習

學生要學習課程時，系統會依照教師所建構的課程架構顯示教材，學生在學習完一個單元教材後，系統會導到形成性評量，通過該單元形成性評量

者（即表非達成該單元的學習目標），即可以進行後續單元的學習。如未通過形成性評量（即未達成學習目標），則系統會導引到該單元教材，進行補救學習。適性學習的程式處理流程如下：
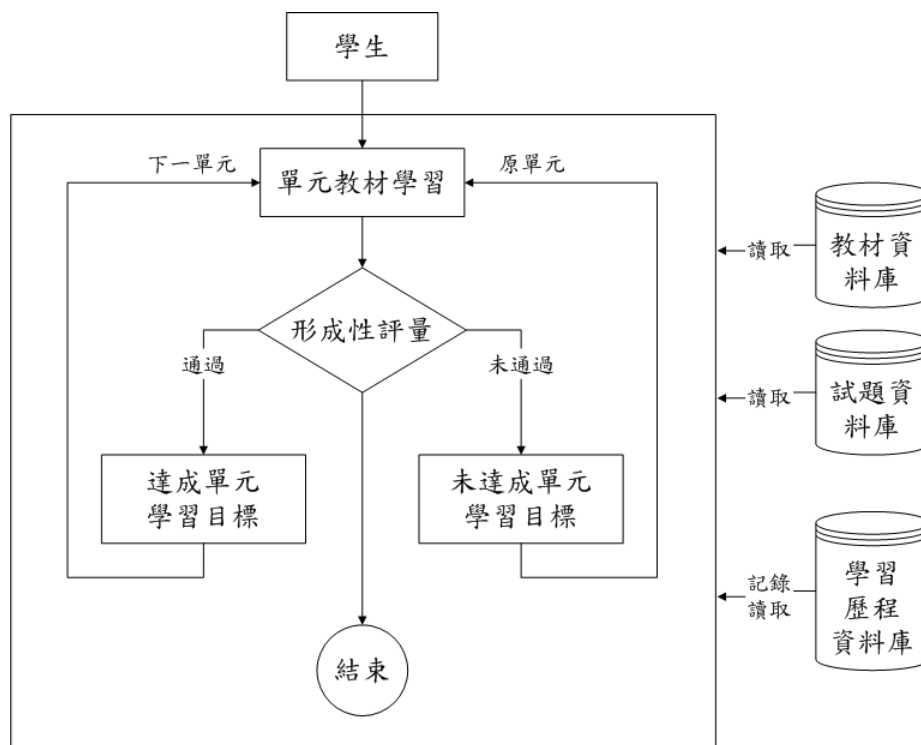
圖 13 適性學習流程圖

3.3.3 學習時間及學習狀態值

1、學習時間追蹤

由於教材（SCO）和學習管理平台（LMS）的溝通必須透過 8 個 API Function，其中 Initialize( )是設定初始狀態，Terminate( )是結束瀏覽，所以要偵測學習者瀏覽每一個 SCO 所花費的時間時，只需記錄每一個 SCO 執行 Initialize( )和 Terminate( )的時間點並計算其時間差，就可以正確的記錄單元學習時間。本系統透過 Data Model 來記錄，語法如下：

doSetValue("cmi.session_time", time)

另外將每一個單元的學習時間加總，就可以得知學生在學習此課程總共花費的時數。所以為了正確的記錄學習時間，在每個 SCO 內嵌入 APIWrapper.js 程式的方式如下：

<script language=javascript src=APIWrapper.js></script>

2、學習狀態值

　　利用 SCORM 1.3 所定義的 64 個 Data Model 可以記錄學生的學習狀態值。例如：

cmi.completion_status：記錄每個 SCO 的學習狀態

cmi.score_scaled：記錄測驗分數

cmi.scaled_passing_scroe：記錄測驗及格分數

cmi.objectives.n.success_status：記錄學習目標的狀態

並且透過 API Function 我們可以記錄和讀取學生的學習狀態值，例如：

記錄學習狀態值：doSetValue（"cmi.success_status",passed)

讀取學習狀態值：doGetValue（"cmi.success_status"）

3.3.4 SCORM 教材上傳

　　教師上傳的 SCORM 教材，必需符合 SCORM 1.3 規範，所以教材上傳到平台後，系統會先進行解壓縮到 Temp 資料夾，然後檢查是否包含 manifest 檔案（imsmanifest.xml），再對檔案進行證驗，如果格式符合，系統會為教材取得一個唯一序號，並將課程複製到 CourseImports 的資料夾，同時刪除 Temp

資料夾中的檔案，接著解析 manifest 檔案並寫到資料庫，以方便學生進行課程註冊與瀏覽。SCORM 教材上傳的程式處理流程如下圖：
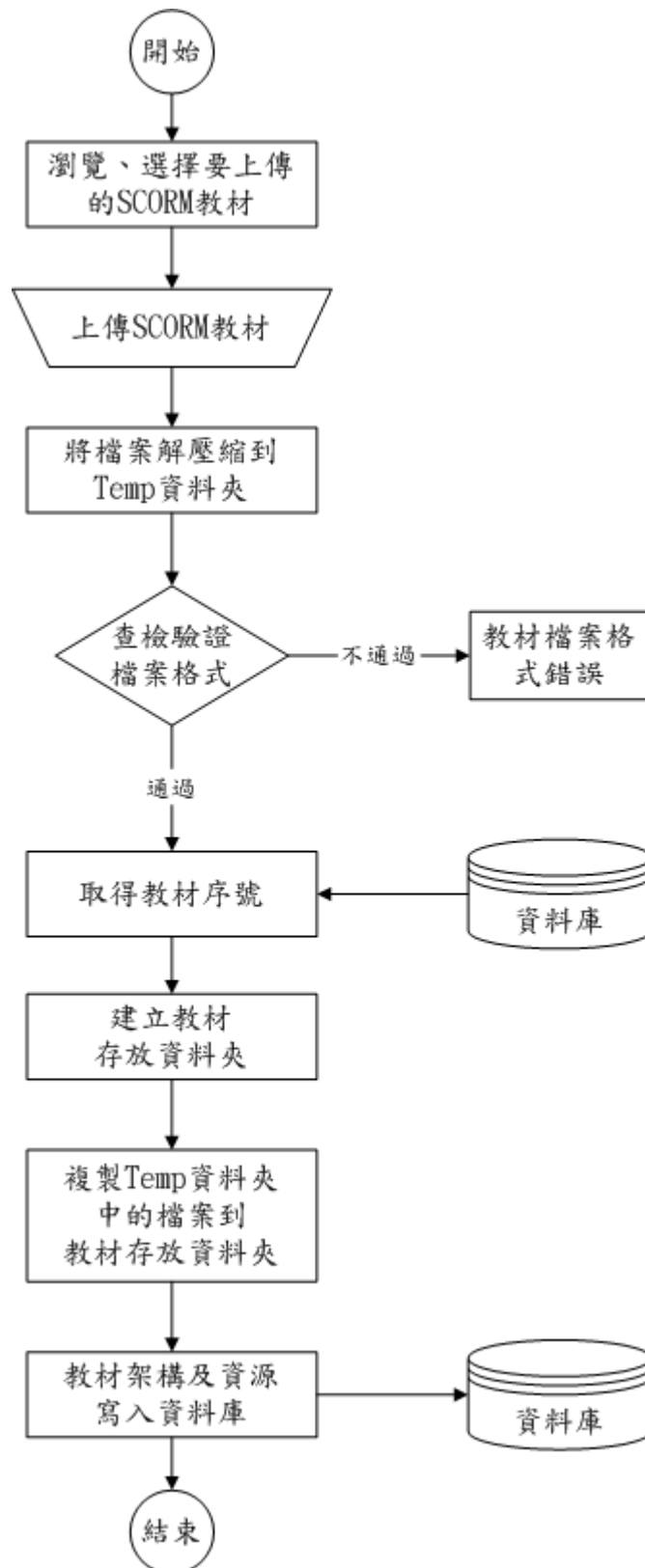
圖 14 SCORM 教材上傳統程圖

3.3.5 教材 **Meta-data** 著錄

在 SCORM 架構下，利用 Meta-data 描述各個相關的教材物件（Asset、SCO、Organization），可以使得被描述的教材具有可被搜尋性，學習者可以透過搜尋的功能，尋找適合的學習教材。但 SCORM 所定義的 Meta-data 欄位資料約有 60 個，經分析後大部分資料可由系統預設值自動填入，教師只需輸入基本的幾個欄位資料即可完成轉換的工作。教材 Meta-data 著錄的程式處理流程如下：
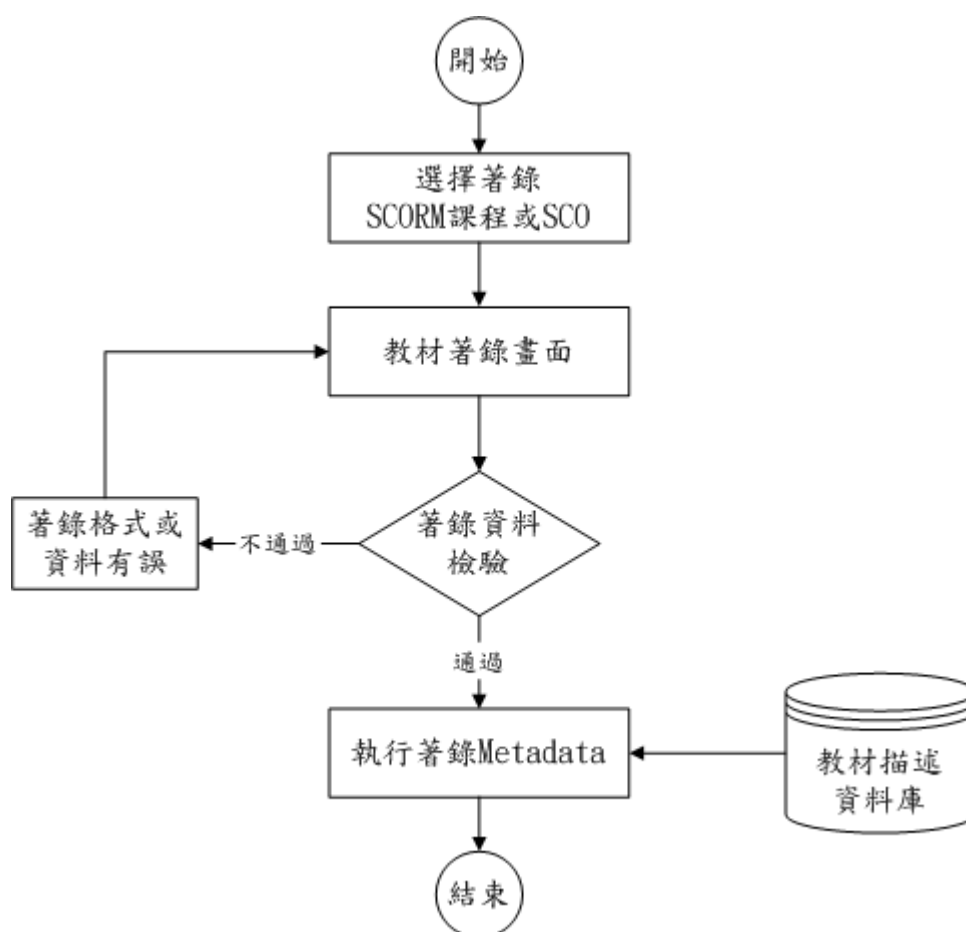
圖 15 教材 Meta-data 著錄流程圖

3.4 資料庫規格設計

以下各表為資料庫規格,【PK】代表主鍵,【FK】代表外來鍵。

1、使用者權限

系統權限控管將使用者分成學生、教師、系統管理者,不同的用戶以使用者類別來區分。

表 2 使用者資料表 sys_user

欄位名稱	資料類型	描述
user_id	char(10)	帳號【PK】
user_password	char(20)	密碼
user_name	char(10)	姓名
english_nam	char(20)	英文名
is_active	char(1)	使用權
email	char(50)	電子郵件
user_group_id	char(1)	群組【FK】

表 3 群組資料表 user_group

欄位名稱	資料類型	描述
user_group_id	char(1)	群組【PK】
user_group_name	char(50)	群組名稱

2、教材結構

SCORM 教材上傳後,系統會解析 imsmanifest.xml 檔案,並將每一個單元教材資料記錄於資料庫。

表 4 課程資料表 CourseInfo

欄位名稱	資料類型	描述
CourseID	char(50)	課程 ID【PK】
CourseTitle	char(50)	課程名稱
ImportDataTime	date	上傳時間
Metadata	char(50)	著錄 Metadata

表 5 教材項目資料表 ItemInfo

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
OrganizationIdentifier	char(255)	組識參照
ItemIdentifier	char(255)	單元項目參照
ResouuceIdentifier	char(255)	單元資源參照
Launch	char(255)	單元教材位置
Type	char(50)	教材類型
Title	char(255)	單元教材名稱
ActivityID	int	自動編號【PK】

3、課程描述資料

　　課程描述資料表包含 SCORM 所定義的九種 Metadata，主要作為教材索引之用。

表 6 描述資料表 lom_general

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
identifier_catalog	char(255)	目錄的名稱
identifier_entry	char(255)	資源在目錄系統的名稱
title	char(255)	資源的名稱
language	char(255)	資源可適用的語言
description	char(255)	這個資源的描述
keyword	char(255)	描述這個資源的關鍵字
coverage	char(255)	描述適合這個資源的涵蓋範圍
structure_source	char(255)	學習資源的組織結構
structure_value	char(255)	學習資源的組織結構值
aggregationLevel_source	char(255)	資源所聚集資源程度
aggregationLevel_value date	char(255)	資源所聚集資源程度值

表 7 描述資料表 lom_lifecycle

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
version	char(255)	目前的修訂版本
status_source	char(255)	目前的狀態

欄位名稱	資料類型	描述
status_value	char(255)	目前的狀態值
contribute_role_source	char(255)	貢獻的種類
contribute_role_value	char(255)	貢獻的種類值
contribute_entity	char(255)	個人或組織的資訊
contribute_date_datetime	char(255)	貢獻的日期
contribute_date_description	char(255)	貢獻的日期之描述

表 8 描述資料表 lom_metametadata

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
identifier_catalog	char(255)	目錄的名稱
identifier_entry	char(255)	metadata 在目錄系統的名稱
contribute_role_source	char(255)	貢獻角色
contribute_role_value	char(255)	貢獻角色的值
contribute_entity	char(255)	個人或組織的資訊
contribute_date_datetime	char(255)	描述貢獻的日期
contribute_date_description	char(255)	貢獻的日期描述
metadataschema	char(255)	使用的規範
language	char(255)	適用的語言系統

表 9 描述資料表 lom_technical

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
format	char(255)	資源的資料格式
size	char(255)	資源的大小
location	char(255)	資源的位置
requirement_orComposite_type_source	char(255)	所需軟硬體種類
requirement_orComposite_type_value	char(255)	所需軟硬體種類值
requirement_orComposite_name_source	char(255)	所需軟硬體名稱
requirement_orComposite_name_value	char(255)	資源軟硬體名稱值
requirement_orComposite_minimumversion	char(255)	最低支援的版本
requirement_orComposite_maximumversion	char(255)	最高支援的版本
installationremarks	char(255)	描述如何安裝
otherplatformrequirements	char(255)	描述其他軟硬體
duration_duration	char(255)	使用資源所需時間
duration_description	char(255)	描述使用所需時間

表 10 描述資料表 lom_educational

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
interactivitytype_source	char(255)	互動形式
interactivitytype_value	char(255)	互動形式的值
learningresourcetype_source	char(255)	資源種類
learningresourcetype_value	char(255)	資源種類的值
interactivitylevel_source	char(255)	使用者互動程度
interactivitylevel_value	char(255)	使用者互動程度的值
semanticdensity_source	char(255)	資源對使用者是否有用
semanticdensity_value	char(255)	資源對使用者是否有用的值
intendedenduserrole_source	char(255)	資源使用對象
intendedenduserrole_value	char(255)	資源使用對象的值
context_source	char(255)	資源適用在哪裡
context_value	char(255)	資源適用在哪裡的值
typicalagerange	char(255)	資源適用的年齡範圍
difficulty_source	char(255)	資源難易度
difficulty_value	char(255)	資源難易度的值
typicallearningtime_duration	char(255)	學習這個資源所花的時間
typicallearningtime_description	char(255)	學習時間的描述
description	char(255)	註解該如何學習這個資源
language	char(255)	學習者使用的語言

表 11 描述資料表 lom_rights

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
cost_source	char(255)	使用資源是否要付費
cost_value	char(255)	使用資源是否要付費的值
copyrightandotherrestrictions_source	char(255)	資源是否有版權
copyrightandotherrestrictions_value	char(255)	資源是否有版權的值
description	char(255)	註解一些使用上的條件

表 12 描述資料表 lom_relation

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】

欄位名稱	資料類型	描述
kind_source	char(255)	和其他資源關聯的種類
kind_value	char(255)	和其他資源關聯的種類的值
resource_identifier_catalog	char(255)	關聯資源的詳細資料
resource_identifier_entry	char(255)	目錄的名稱
resource_description	char(255)	資源在目錄系統的名稱

表 13 描述資料表 lom_annotaion

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
entity	char(255)	註解者的資料
date_datetime	char(255)	註解的時間
date_description	char(255)	註解的時間描述
description	char(255)	註解的內容

表 14 描述資料表 lom_classification

欄位名稱	資料類型	描述
CourseID	char(255)	課程 ID【FK】
purpose_source	char(255)	分類的用途
purpose_value	char(255)	分類的用途值
taxonpath_source	char(255)	在分類系統中的路徑
taxonpath_taxon_id	char(255)	在分類系統中的路徑值
taxonpath_taxon_entry	char(255)	在分類系統中的路徑名稱
description	char(255)	對分類用途的描述
keyword	char(255)	分類用途的關鍵字

4、學習歷程

系統會記錄學習學習的歷程,包括學習的時間、次數及狀態值等。

表 15 學習歷程資料表 LearnTrack

欄位名稱	資料類型	描述
UserID	char(10)	帳號【FK】
UserName	char(50)	使用者姓名【FK】
CourseID	char(50)	課程 ID【FK】
SCOID	char(255)	單元 ID
Attempt	char(10)	瀏覽次數
cmi_completion_state	char(20)	單元完成

cmi_score_scaled	char(10)	單元成績
cmi_success_state	char(20)	單元狀態
cmi_total_time	char(20)	瀏覽時間
date	date	瀏覽日期
num	int	自動編號【PK】

5、能力指標

　　能力指標資料表管理九年一貫各學習領域的能力指標相關資訊。

表 16 能力指標資料表 target

欄位名稱	資料類型	描述
id	int	自動編號【PK】
domain	char(20)	領域名稱
targetNum	char(20)	能力指標
nstage	ing	領域階段
sgrade	char(10)	階段年級
description	char(255)	能力指標描述

四、系統建置與實作

4.1 系統建置

　　經由上一章的分析與設計，我們已經了解系統的功能需求與各模組之間的相互運作流程。在這個章節我們將說明系統的建置、軟體體規格，並展示實作完成的功能畫面，以下先針對系統架構及規格做詳細說明。

4.1.1 系統架構

　　本系統採用 MVC 設計模式（如下圖），將系統分成三個層次，View 的部分負責所有與使用者有關的程式介面，如輸入表單或結果呈現畫面，這部分的程式大都以 JSP 結合 Java Script 來設計。Controller 的部分則由 Servlet 與 JavaBean 來負責，包含資料傳送、檔案壓縮解壓縮、教材包裹清單檔寫入資料庫等。Model 的部分利用 JDBC 與後端資料庫連結，負責伺服器端資料的取得、運算，並產生運算結果[18]。
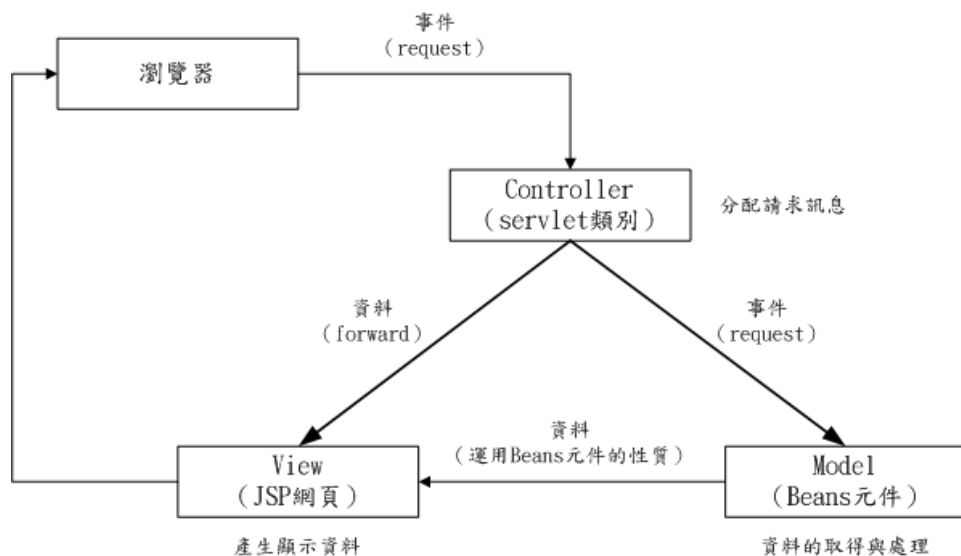
圖 16 MVC 架構圖（資料來源：JSP 動態網頁入門實務）

4.1.2 系統規格

本系統主要以 JSP 及 JAVA 程式語言來設計，因此教學平台的執行環境可以在不同的電腦平台上正常運作，所選用的 JSP/Servlet Container 是 jakarta tomcat 5.0，若改用其他的伺服器或 Application Server，只需調整有關的環境設定參數與佈署資訊即可。而資料庫系統為考量中小學環境乃採用 Microsoft Access，以方便中小學教師管理與維護。

系統規格分為伺服器端和使用者端，軟硬體需求如下：

1、伺服器端（Server）

（1）硬體需求：

Intel Pentium IV 2.0 GHZ 以上之 CPU

RAM 512M 以上

（2）軟體需求：

作業系統：Microsoft Windows 2000、Windows XP

資料庫管理系統：Microsoft Access 2000

網頁伺服器：Tomcat 5.0

JDK：JDK 1.4.2_03

2、使用者端（Client）

（1）硬體需求：

Intel Pentium 以上之 CPU 並具備上網功能

RAM 256 以上

（2）軟體需求：

作業系統：Windwos XP

瀏覽器：Microsoft Internet Explorer 5.0 以上

4.2 系統實作

以下將從「使用者權限管理」、「功能選單編輯」、「適性學習導覽」、「學習歷程瀏覽」、「SCORM 教材上傳」、「教材 Meta-data 著錄」、「SCORM 教材搜尋」、「能力指標維護」等功能，說明整個系統的運作流程。

4.2.1 使用者權限管理

使用者權限管理可以讓系統管理者很容易的管理不同使用者的權限。系統管理者可以針對不同的使用者群組（學生、教師、系統管理者）增、刪不同的功能選單，系統在使用者下次登入時就會自動產生對應的樹狀選單，無需直接修改程式。

圖 17 使用者權限控管畫面

4.2.2 功能選單編輯

　　功能選單編輯可以讓系統管理者很容易的維護整個系統功能選單。系統管理者可以使用「新增 Child」按鈕，新增某一功能的子選單，只要輸入選單稱名、選單群組及此選單的 Target Frame 名稱和 URL，系統就可以自動產生對應的樹狀選單，無需直接修改程式。

圖 18 功能選單編輯畫面

4.2.3 適性學習導覽

學生在學習完一個單元教材後，進行形成性評量，通過該單元形成性評量者（即表示達成該單元的學習目標），可以進行後續單元的學習。如未通過形成性評量（即未達成學習目標），則系統會導引到該單元教材，進行補救學習。

圖 19 適性學習導覽畫面

4.2.4 學習歷程瀏覽

　　學生學習過課程教材後，會留有學習歷程記錄，包括學生瀏覽的課程及單元教材名稱、瀏覽次數、停留時間，累計學習該課程所花費的時間、測驗結果等，老師可依所教授課程或個別學生為查詢依據，以了解學生的學習情形；學生也可依單元課程或單元測驗查看學習歷程記錄，做為學習的參考。

圖 20 教師查詢學習歷程畫面

圖 21 學生查詢學習歷程畫面

4.2.5 SCORM 教材上傳

　　教師上傳的 SCORM 教材，必需符合 SCORM 1.3 規範，所以教材上傳到平台後，系統會先進行解壓縮，然後檢查是否包含 manifest 檔案（imsmanifest.xml），再對檔案進行證驗，如果格式符合，就會解析 manifest 檔案並寫到資料庫，以方便學生適性瀏覽。

圖 22 SCORM 教材上傳畫面

4.2.6 教材 Meta-data 著錄

為了管理教材，教師可以針對每一個課程著錄 Meta-data，方便其他老師或學生進行 SCORM 教材的搜尋。

圖 23 教材 Meta-data 著錄畫面

4.2.7 SCORM 教材搜尋

教師或學生可以課程名稱、能力指標、七大領域或教材描述等搜尋條件，尋找所需的教材。

圖 24 SCORM 教材搜尋畫面

4.2.8 能力指標維護

系統依照七大領域、學習階段、能力指標,建立每一筆能力指標記錄,並可進行能力指標的搜尋與維護。

圖 25 能力指標維護畫面

五、系統評估與結論

5.1 系統評估

為了驗證本研究所提出的適化性網路學習平台,是否合乎 SCORM LMS 標準,我們下載 ADL 所提供的測試程式「ADL SCORM Conformance Test Suite Version 1.3.2」來進行系統的評估。

5.1.1 SCORM 標準測試環境介紹

1. 作業系統:Microsoft Windows 2000 SP2、XP SP1 或 XP SP2
2. 瀏覽器:Microsoft Internet Explorer 6.0 以上版本或 Netscape 7.0 以上版本
3. 安裝 ADL SCORM Contromance Test Suit Version 1.3.2 測試軟體。
4. 安裝 Sun Java 2 Software Development Kit (J2SDK) Version 1.4.1 或 Sun Java Runtime Environment (JRE) Standard Edition Version 1.4.1 以上版本。
5. 安裝適化性網路學習平台,並設定相關環境參數。

5.1.2 測試程序

ADL SCORM Conformance Test Suite Version 1.3.2 在測試平台的過程有 62 個步驟,敘述如下:

1、執行ADL TestSuti 1.3.2後，會出現五個選項（如圖 26 所示）：

    (1)測試學習管理平台（LMS）是否符合 SCORM 標準。

    (2)測試課程包裏（Content Package）是否符合 SCORM 標準。

    (3)測試教材檔（SCO）是否符合 SCORM 標準。

    (4)測試描述資料（Meta-data）是否符合 SCORM 標準。

    (5)測試教材清單（Manifest）是否符合 SCORM 標準。

    因為我們要測試本研究所設計的適性化學習平台是否合乎 SCORM 標準，所以選擇第一項來進行測試。

2、填入平台的名稱、版本序號、廠商或發展者的名稱（如圖 27 所示）。

3、上傳ADL提供的 56 個測試課程，並勾選上傳成功的課程，(如圖 28 所示)，在上傳的過程中，如有一個以上的課程上傳失敗，將無法進行後續的評估。

4、新增使用者Joe Student，並填入使用者的帳號（如圖 29、30 所示）。

5、新增使用者Mary Learner，並填入使用者的帳號（如圖 31、32 所示）。

6、以Joe Student登入系統，並進行課程 1 的註冊，註冊成功則勾選「Yes」（如圖 33、34 所示）。

7、以Mary Learner登入系統，並進行課程 2-56 的註冊註冊成功則勾選「Yes」（如圖 36 所示）。

8、以Joe Student來瀏覽測試課程 1，課程 1 主要是進行API的測試（如圖 37 所示）。

9、以Mary Learner來瀏覽測試課程 2，課程 2 主要是進行Data Model的測試（如圖 39 所示）。

10、以Mary Learner來瀏覽測試課程 3，課程 3 主要是進行Sequencing的測試（如圖 41 所示），接著同樣的步驟瀏覽測試課程 4-56，課程 4-56 也是進行Sequencing的測試（如圖 42 所示）。

11、在測試完第56個課程後，會顯示最後的評估結果（如圖 43所示），詳
細的測試LOG檔請參考附錄。
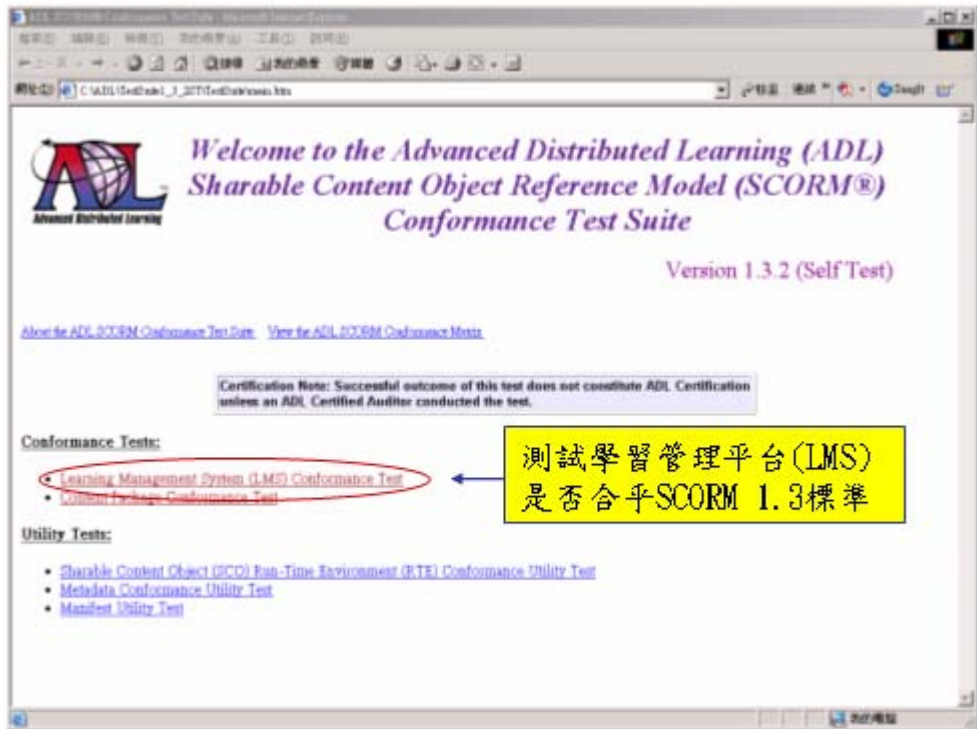
圖 26 ADL SCORM Conformance Test Suit 畫面

圖 27 填入平台的基本資料

48
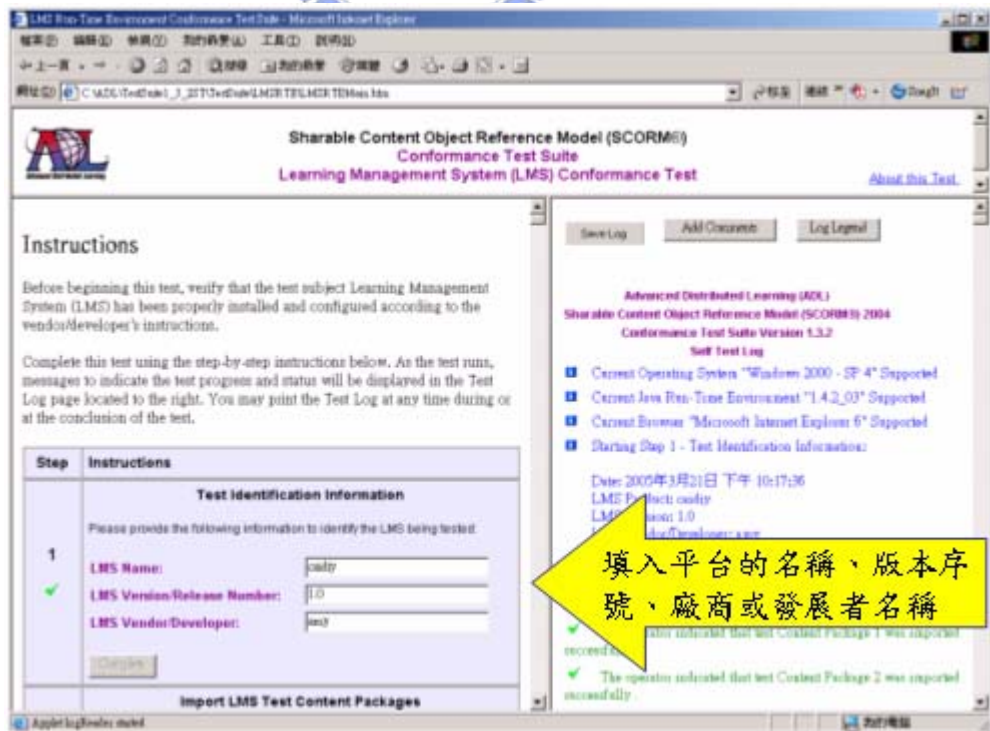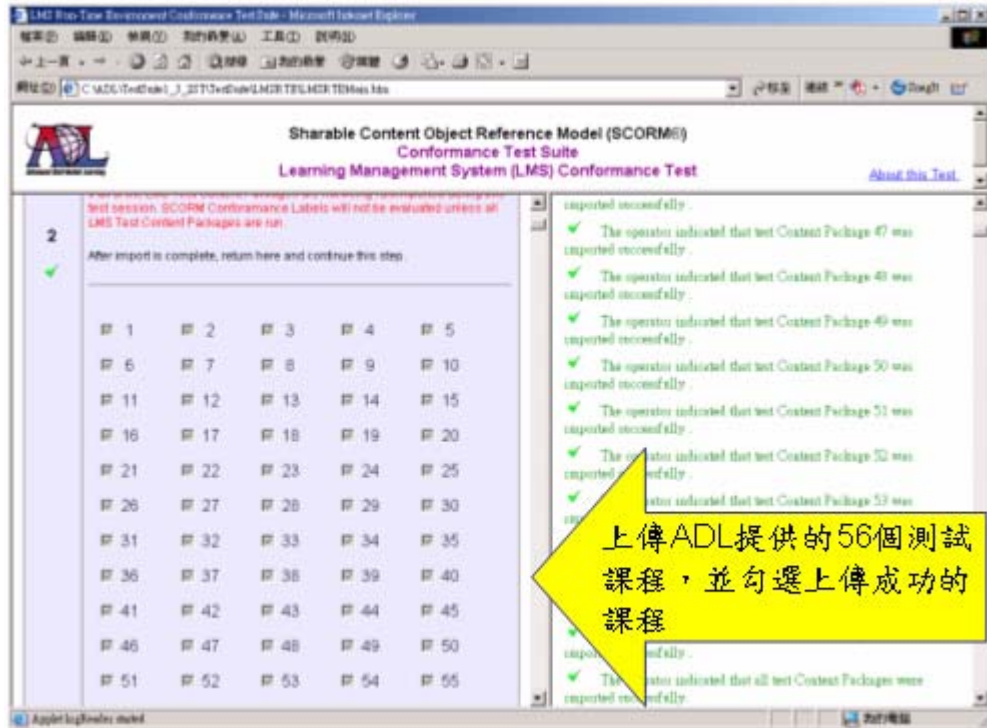
圖 28 上傳 56 個測試課程

圖 29 新增使用者 Joe Student
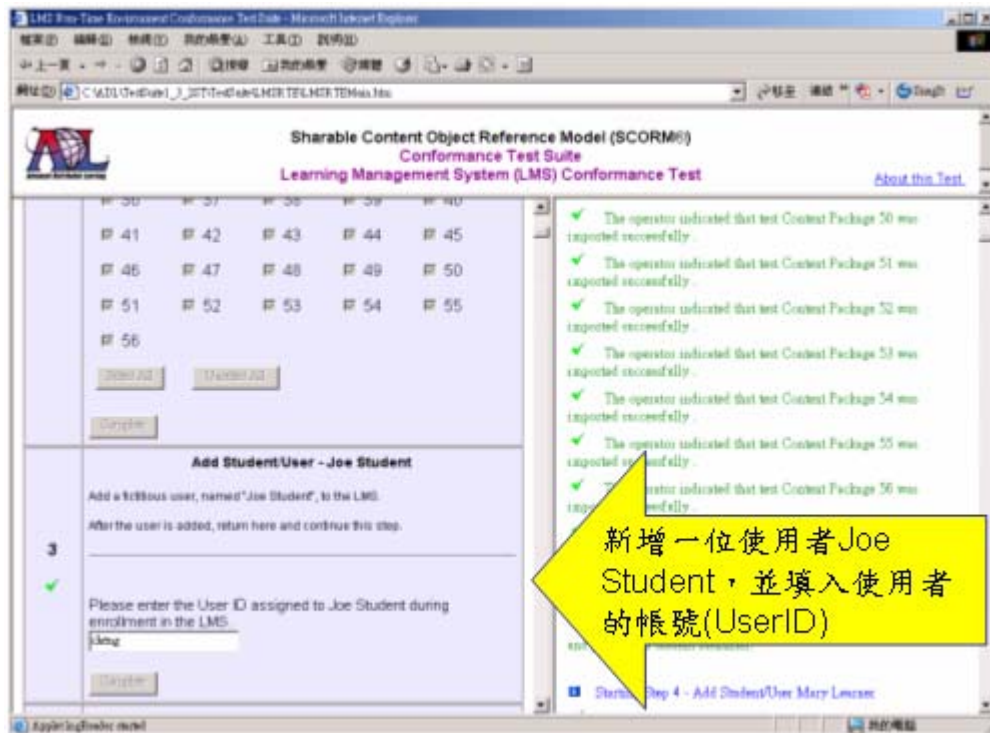
圖 30 輸入使用者 Joe Student 的 UserID

圖 31 新增使用者 Mary Learner
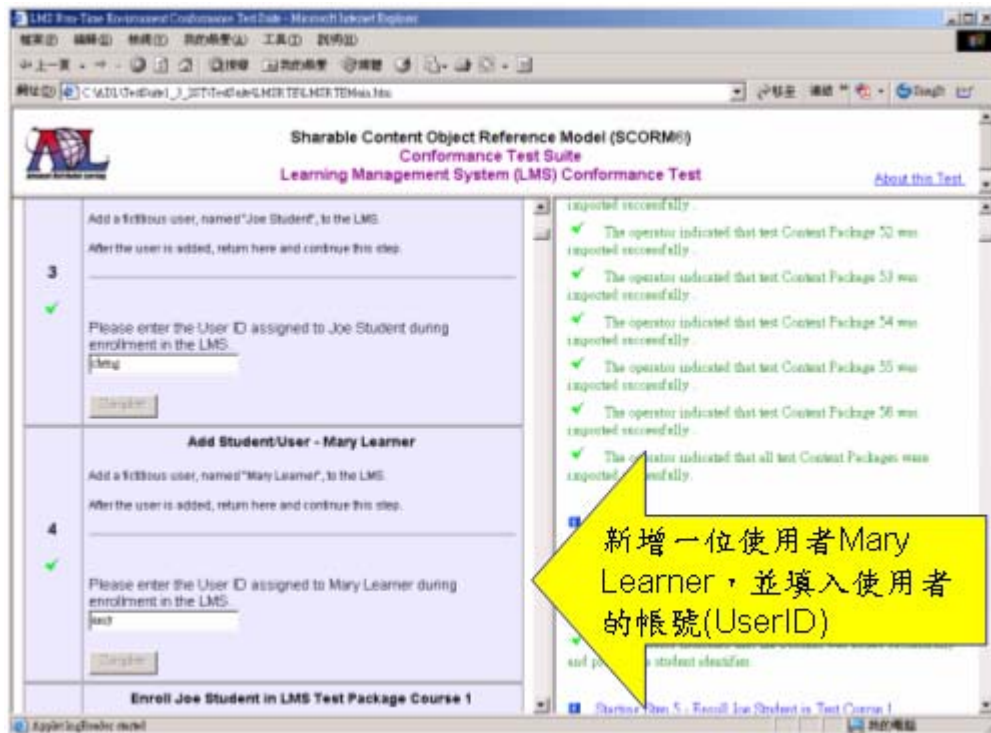
圖 32 輸入使用者 Mary Learner 的 UserID

圖 33 Joe Student 註冊課程 1
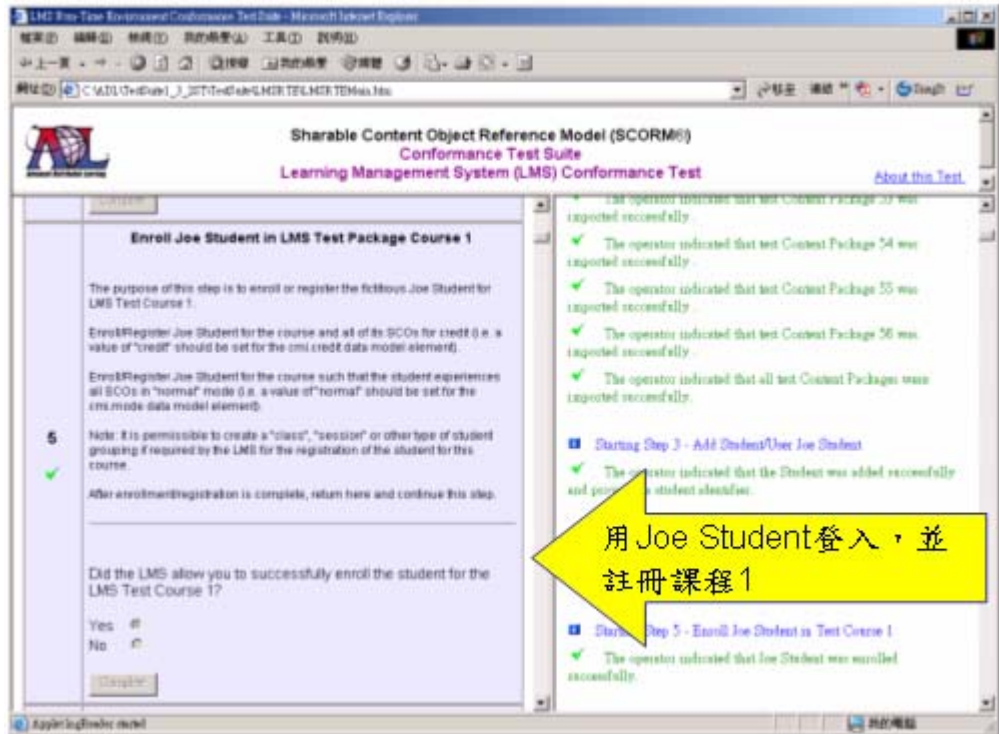
圖 34 成功註冊課程 1

圖 35 Mary Learner 註冊課程 2-56
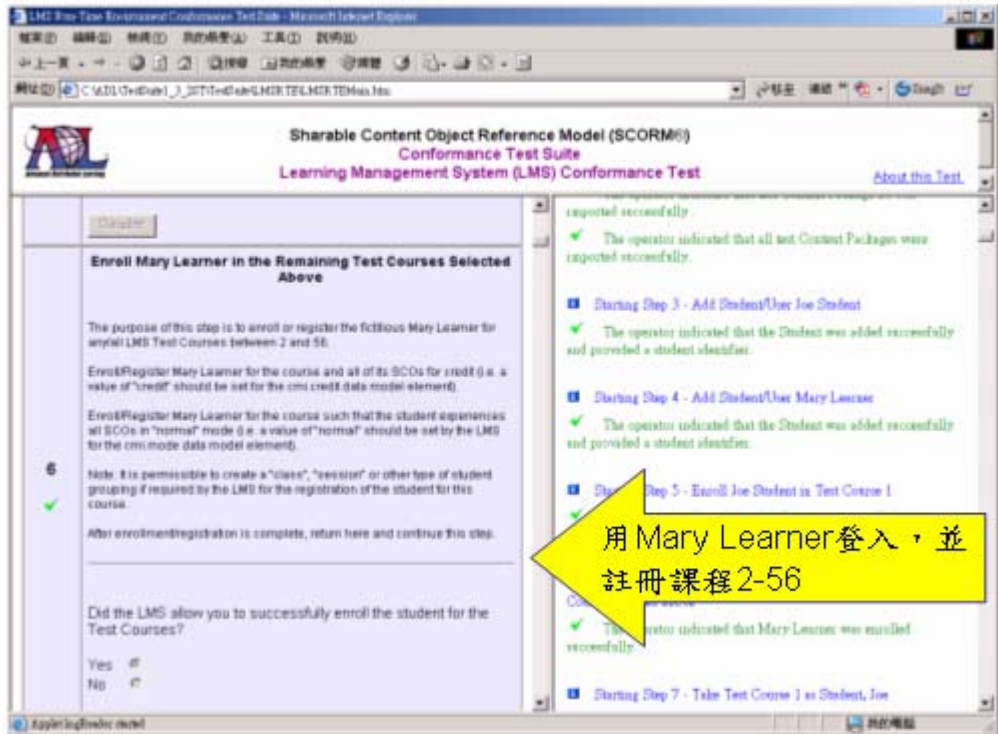
圖 36 成功註冊課程 2-56
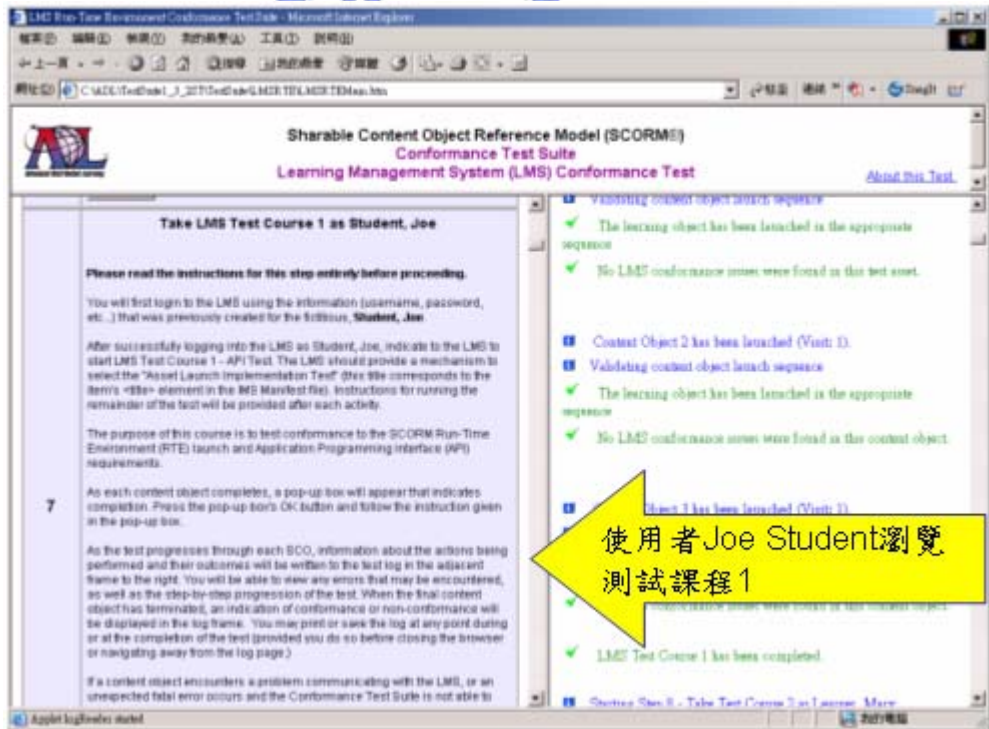
圖 37 Joe Student 瀏覽測試課程 1

圖 38 瀏覽測試課程 1
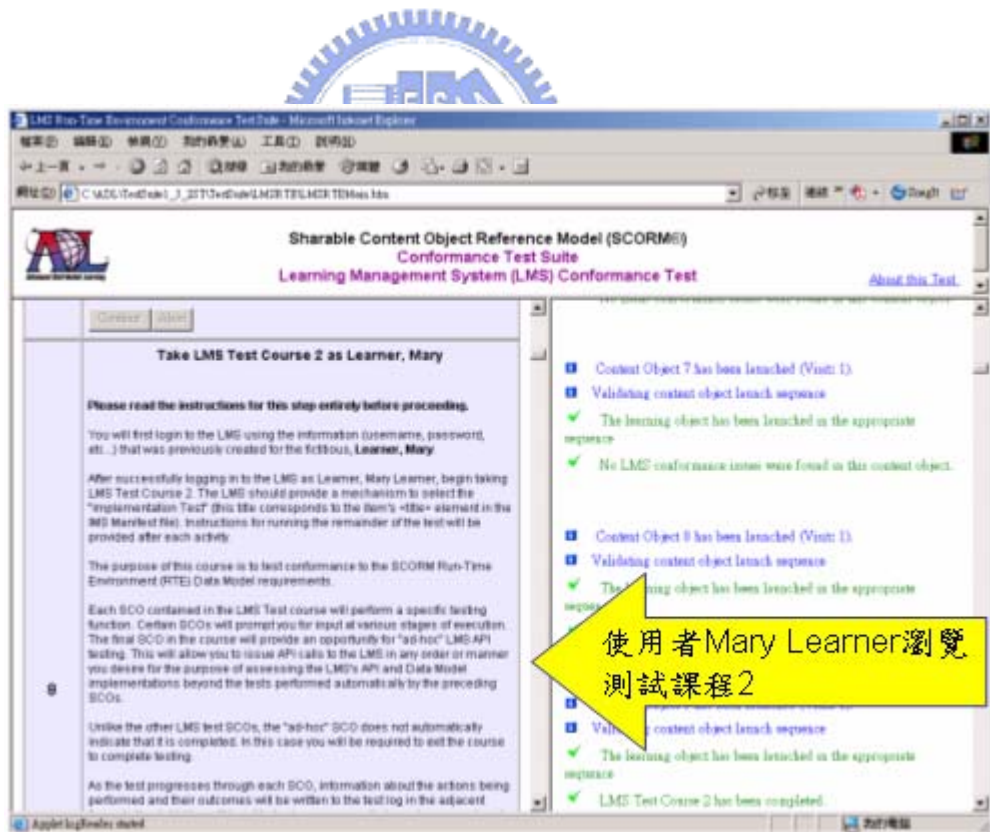
圖 39 Mary Learner 瀏覽測試課程 2

圖 40 瀏覽測試課程 2
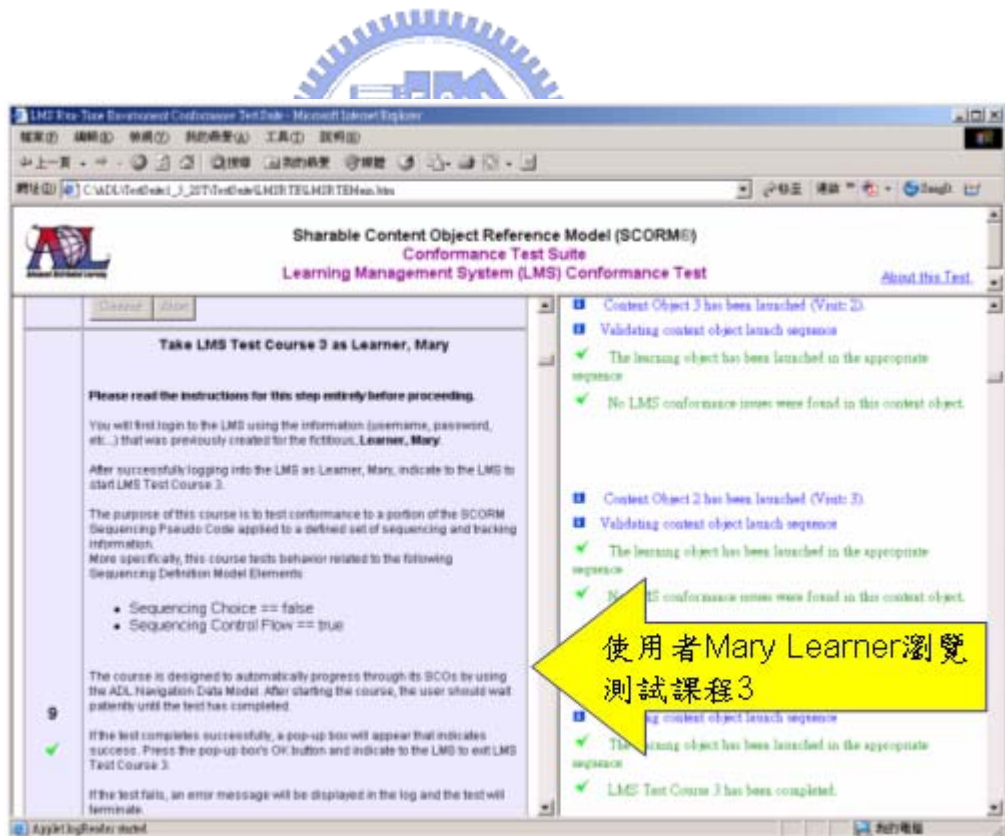
圖 41 Mary Learner 瀏覽測試課程 3
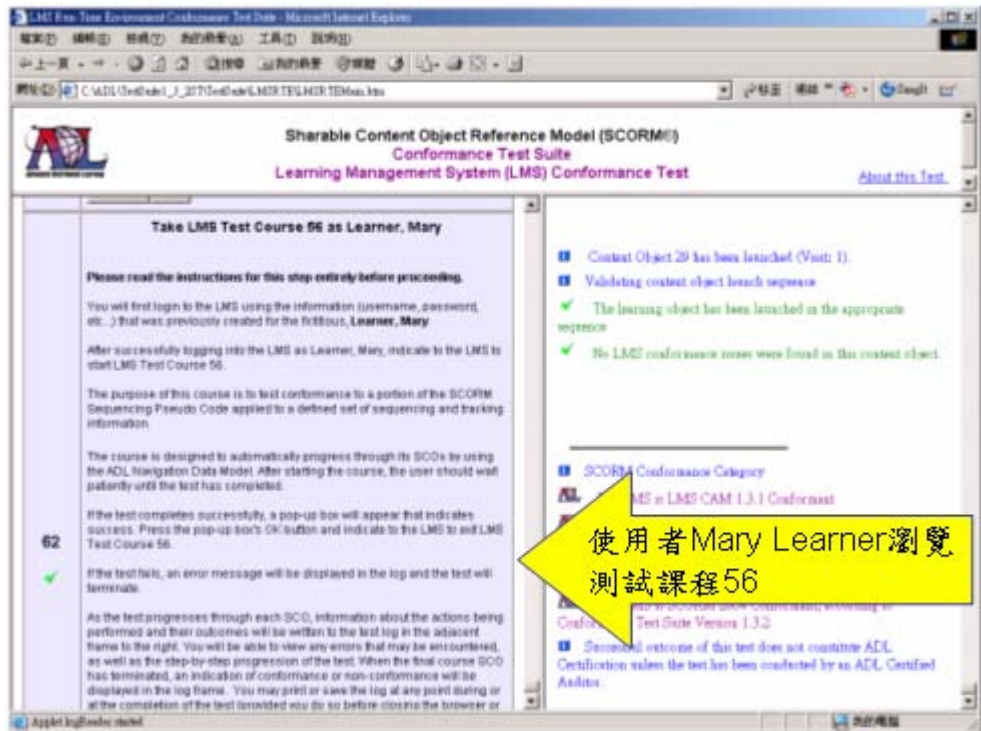
圖 42 Mary Learner 瀏覽測試課程 56
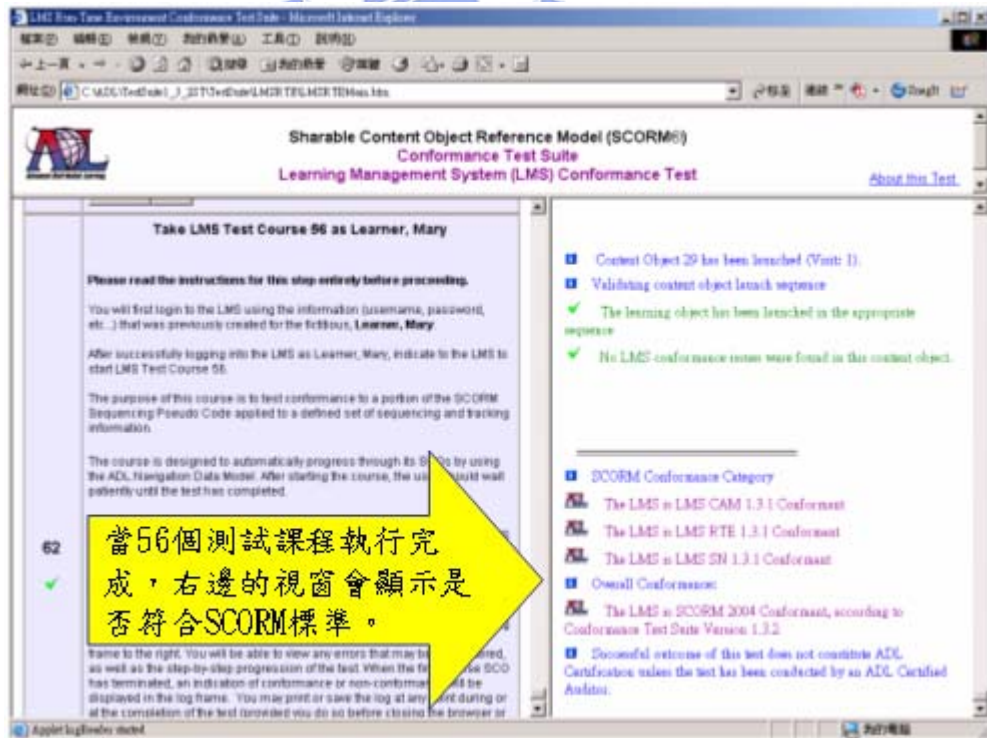
圖 43 測試結果畫面

5.2 研究結論

本研究所設計開發之「結合能力指標並符合 SCORM 1.3 之適性化網路學習平台」，經評估測試後具以下優點：

1、融入九年一貫能力指標

本系統支援九年一貫能力指標的課程教材管理機制，在九年一貫課程正式實施及資訊教育總藍圖的推動，為了因應網路教學、資訊融入各科教學、教材管理、和教師上課的實際需求等，九年一貫能力指標的融入能讓教師用最少的蒐尋與管理時間，使用網路資源；並且教材加入能力指標，在學生評量時亦可分析所具備或欠缺的能力。

2、支援適性化學習

本系統所提供的適性化學習功能，確能依據學生的學習狀況和測驗結果，導引到適合的教材，達到適性學習的需求。另外，教師可由學生學習歷程得知學生所瀏覽的教材、所花費的時間等的學習特性，並可追蹤學生個別的學習進度和測驗情形，藉了解學生的學習狀況，做為輔助學生個別學習的參考。

3、符合 SCORM 1.3 學習管理平台標準

本系統通過 ADL SCORM Conformance Test Suite 的測試，為一符合 SCORM 標準之學習管理平台，因此教師可以很容易上傳、管理與共享符合 SCORM 1.3 規範的課程教材；學生也可透過本研究所設計之學習管理平台進行網路學習，平台所記錄的學生各別學習歷程，亦可做為學生學習的參照。

5.3 未來發展方向

適性學習系統依據學生的學習狀況和測驗結果來導引呈現適合的教材，可將測驗題庫結合本系統，讓教材設計者在編製測驗試題時，自動產生能與 LMS (Learning Management System)溝通的 SCO (Sharable Content Object)元件，及加入可記錄學生學習狀態值的 Data Model。

學習檔案系統是適性學習系統以外，能了解及分析學生個別化學習特性與成果的另一參考依據，如何將學習檔案結合本系統，以取得更多的學生資訊，對學生做個別化的指導，是本系統可以再研究的地方。

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附錄

Advanced Distributed Learning (ADL)
Sharable Content Object Reference Model (SCORM®) 2004
Conformance Test Suite Version 1.3.2
Self Test Log

Current Operating System "Windows 2000 - SP 4" Supported
Current Java Run-Time Environment "1.4.2_03" Supported
Current Browser "Microsoft Internet Explorer 6" Supported

Starting Step 1 - Test Identification Information:
Date: 2005 年 3 月 21 日下午 10:17:36
LMS Product: caidiy
LMS Version: 1.0
LMS Vendor/Developer: amy
Click here to view the LMS RTE Test Suite Results

Starting Step 2 - Import Test Content Packages
The operator indicated that test Content Package 1 was imported successfully .
The operator indicated that test Content Package 2 was imported successfully .
The operator indicated that test Content Package 3 was imported successfully .
The operator indicated that test Content Package 4 was imported successfully .
The operator indicated that test Content Package 5 was imported successfully .
The operator indicated that test Content Package 6 was imported successfully .
The operator indicated that test Content Package 7 was imported successfully .
The operator indicated that test Content Package 8 was imported successfully .
The operator indicated that test Content Package 9 was imported successfully .
The operator indicated that test Content Package 10 was imported successfully .
The operator indicated that test Content Package 11 was imported successfully .
The operator indicated that test Content Package 12 was imported successfully .
The operator indicated that test Content Package 13 was imported successfully .
The operator indicated that test Content Package 14 was imported successfully .
The operator indicated that test Content Package 15 was imported successfully .
The operator indicated that test Content Package 16 was imported successfully .
The operator indicated that test Content Package 17 was imported successfully .
The operator indicated that test Content Package 18 was imported successfully .
The operator indicated that test Content Package 19 was imported successfully .
The operator indicated that test Content Package 20 was imported successfully .
The operator indicated that test Content Package 21 was imported successfully .
The operator indicated that test Content Package 22 was imported successfully .
The operator indicated that test Content Package 23 was imported successfully .
The operator indicated that test Content Package 24 was imported successfully .
The operator indicated that test Content Package 25 was imported successfully .
The operator indicated that test Content Package 26 was imported successfully .
The operator indicated that test Content Package 27 was imported successfully .
The operator indicated that test Content Package 28 was imported successfully .
The operator indicated that test Content Package 29 was imported successfully .
The operator indicated that test Content Package 30 was imported successfully .
The operator indicated that test Content Package 31 was imported successfully .
The operator indicated that test Content Package 32 was imported successfully .
The operator indicated that test Content Package 33 was imported successfully .
The operator indicated that test Content Package 34 was imported successfully .
The operator indicated that test Content Package 35 was imported successfully .
The operator indicated that test Content Package 36 was imported successfully .
The operator indicated that test Content Package 37 was imported successfully .
The operator indicated that test Content Package 38 was imported successfully .
The operator indicated that test Content Package 39 was imported successfully .
The operator indicated that test Content Package 40 was imported successfully .
The operator indicated that test Content Package 41 was imported successfully .
The operator indicated that test Content Package 42 was imported successfully .
The operator indicated that test Content Package 43 was imported successfully .
The operator indicated that test Content Package 44 was imported successfully .
The operator indicated that test Content Package 45 was imported successfully .
The operator indicated that test Content Package 46 was imported successfully .

✔ The operator indicated that test Content Package 47 was imported successfully .
✔ The operator indicated that test Content Package 48 was imported successfully .
✔ The operator indicated that test Content Package 49 was imported successfully .
✔ The operator indicated that test Content Package 50 was imported successfully .
✔ The operator indicated that test Content Package 51 was imported successfully .
✔ The operator indicated that test Content Package 52 was imported successfully .
✔ The operator indicated that test Content Package 53 was imported successfully .
✔ The operator indicated that test Content Package 54 was imported successfully .
✔ The operator indicated that test Content Package 55 was imported successfully .
✔ The operator indicated that test Content Package 56 was imported successfully .
✔ The operator indicated that all test Content Packages were imported successfully.

ℹ Starting Step 3 - Add Student/User Joe Student
✔ The operator indicated that the Student was added successfully and provided a student identifier.

ℹ Starting Step 4 - Add Student/User Mary Learner
✔ The operator indicated that the Student was added successfully and provided a student identifier.

ℹ Starting Step 5 - Enroll Joe Student in Test Course 1
✔ The operator indicated that Joe Student was enrolled successfully.

ℹ Starting Step 6 - Enroll Mary Learner in the remaining Test Courses selected above
✔ The operator indicated that Mary Learner was enrolled successfully.

ℹ Starting Step 7 - Take Test Course 1 as Student, Joe
ℹ ****************************
ℹ Executing Test Package 1
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this test asset.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 1 has been completed.

ℹ Starting Step 8 - Take Test Course 2 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 2
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 4).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 5).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.

ℹ️ Content Object 2 has been launched (Visit: 6).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 7).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 8).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 9).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 10).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 3).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 4).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 7 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 8 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 9 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 2 has been completed.

ℹ️ Starting Step 9 - Take Test Course 3 as Learner, Mary

ℹ️ *****************************
ℹ️ Executing Test Package 3
ℹ️ *****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 3).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 3 has been completed.

ℹ️ Starting Step 10 - Take Test Course 4 as Learner, Mary
ℹ️ *****************************
ℹ️ Executing Test Package 4
ℹ️ *****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 3).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 4 has been completed.

ℹ️ Starting Step 11 - Take Test Course 5 as Learner, Mary
ℹ️ *****************************
ℹ️ Executing Test Package 5
ℹ️ *****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ LMS Test Course 5 has been completed.

ℹ Starting Step 12 - Take Test Course 6 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 6
ℹ ****************************
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 6 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ LMS Test Course 6 has been completed.

ℹ Starting Step 13 - Take Test Course 7 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 7
ℹ ****************************
✔ No LMS conformance issues were found in this content object.

ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 7 has been completed.

ℹ️ Starting Step 14 - Take Test Course 8 as Learner, Mary
ℹ️ *****************************
ℹ️ Executing Test Package 8
ℹ️ *****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 7 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 7 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 7 has been launched (Visit: 3).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 10 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.

ℹ️ Content Object 9 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 8 has been completed.

ℹ️ Starting Step 15 - Take Test Course 9 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 9
ℹ️ ****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 9 has been completed.

ℹ️ Starting Step 16 - Take Test Course 10 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 10
ℹ️ ****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ LMS Test Course 10 has been completed.

ℹ️ Starting Step 17 - Take Test Course 11 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 11
ℹ️ ****************************
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.

Content Object 2 has been launched (Visit: 1).
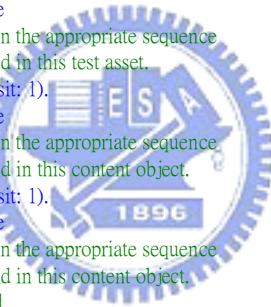Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 11 has been completed.

Starting Step 18 - Take Test Course 12 as Learner, Mary
****
Executing Test Package 12
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 5 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 12 has been completed.

Starting Step 19 - Take Test Course 13 as Learner, Mary
****
Executing Test Package 13
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
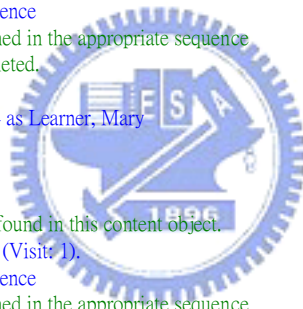Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 13 has been completed.

ℹ️Starting Step 20 - Take Test Course 14 as Learner, Mary
ℹ️****************************
ℹ️ Executing Test Package 14
ℹ️****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 14 has been completed.

ℹ️Starting Step 21 - Take Test Course 15 as Learner, Mary
ℹ️****************************
ℹ️ Executing Test Package 15
ℹ️****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 15 has been completed.

ℹ️Starting Step 22 - Take Test Course 16 as Learner, Mary
ℹ️****************************
ℹ️ Executing Test Package 16
ℹ️****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 16 has been completed.

ℹ️ Starting Step 23 - Take Test Course 17 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 17
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 17 has been completed.

ℹ️ Starting Step 24 - Take Test Course 18 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 18
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 18 has been completed.

ℹ️ Starting Step 25 - Take Test Course 19 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 19
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 19 has been completed.

ℹ Starting Step 26 - Take Test Course 20 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 20
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 20 has been completed.

ℹ Starting Step 27 - Take Test Course 21 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 21
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 21 has been completed.

ℹ Starting Step 28 - Take Test Course 22 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 22
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 22 has been completed.

ℹ Starting Step 29 - Take Test Course 23 as Learner, Mary
ℹ ***************************
ℹ Executing Test Package 23
ℹ ***************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 23 has been completed.

ℹ Starting Step 30 - Take Test Course 24 as Learner, Mary
ℹ ***************************
ℹ Executing Test Package 24
ℹ ***************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.

72

Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 24 has been completed.

Starting Step 31 - Take Test Course 25 as Learner, Mary
****
Executing Test Package 25
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 5 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 25 has been completed.

Starting Step 32 - Take Test Course 26 as Learner, Mary
****
Executing Test Package 26
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 26 has been completed.

ℹ Starting Step 33 - Take Test Course 27 as Learner, Mary
ℹ *****************************
ℹ Executing Test Package 27
ℹ *****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
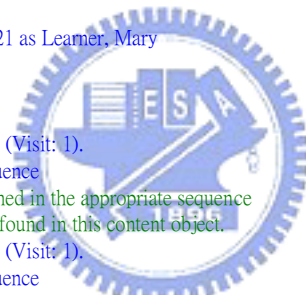✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 27 has been completed.

ℹ Starting Step 34 - Take Test Course 28 as Learner, Mary
ℹ *****************************
ℹ Executing Test Package 28
ℹ *****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 28 has been completed.

ℹ Starting Step 35 - Take Test Course 29 as Learner, Mary
ℹ *****************************

ℹ️ Executing Test Package 29
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 29 has been completed.

ℹ️ Starting Step 36 - Take Test Course 30 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 30
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
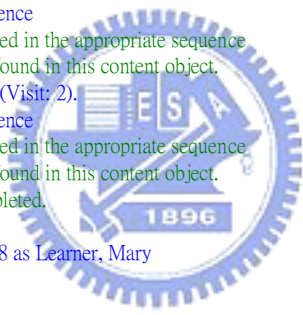ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 1 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 2).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 3).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 30 has been completed.

ℹ️ Starting Step 37 - Take Test Course 31 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 31
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.

Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
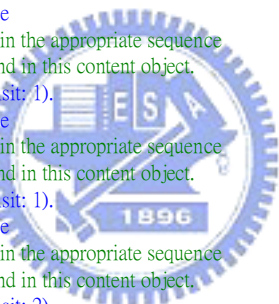No LMS conformance issues were found in this content object.
LMS Test Course 31 has been completed.

Starting Step 38 - Take Test Course 32 as Learner, Mary
****
Executing Test Package 32
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 5 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
LMS Test Course 32 has been completed.

Starting Step 39 - Take Test Course 33 as Learner, Mary
****
Executing Test Package 33
****
Content Object 1 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 3 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 4 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 1 has been launched (Visit: 2).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 2 has been launched (Visit: 2).
Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 3).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 33 has been completed.

ℹ Starting Step 40 - Take Test Course 34 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 34
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 34 has been completed.

ℹ Starting Step 41 - Take Test Course 35 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 35
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.

ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 35 has been completed.

ℹ Starting Step 42 - Take Test Course 36 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 36
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
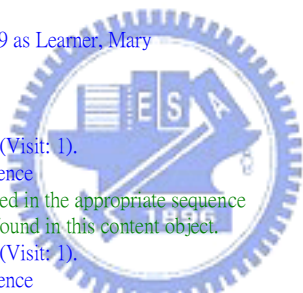ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 36 has been completed.

ℹ Starting Step 43 - Take Test Course 37 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 37
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 37 has been completed.

ℹ Starting Step 44 - Take Test Course 38 as Learner, Mary
ℹ *****************************
ℹ Executing Test Package 38
ℹ *****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 38 has been completed.

ℹ Starting Step 45 - Take Test Course 39 as Learner, Mary
ℹ *****************************
ℹ Executing Test Package 39
ℹ *****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 39 has been completed.

ℹ Starting Step 46 - Take Test Course 40 as Learner, Mary
ℹ *****************************
ℹ Executing Test Package 40
ℹ *****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence

✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 5 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
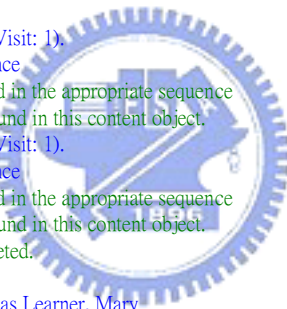✔ LMS Test Course 40 has been completed.

ℹ Starting Step 47 - Take Test Course 41 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 41
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
✔ LMS Test Course 41 has been completed.
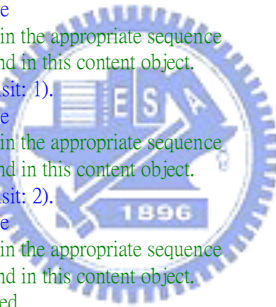
ℹ Starting Step 48 - Take Test Course 42 as Learner, Mary
ℹ ****************************
ℹ Executing Test Package 42
ℹ ****************************
ℹ Content Object 1 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 2 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 3 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 4 has been launched (Visit: 1).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
ℹ Content Object 1 has been launched (Visit: 2).
ℹ Validating content object launch sequence
✔ The learning object has been launched in the appropriate sequence
✔ No LMS conformance issues were found in this content object.
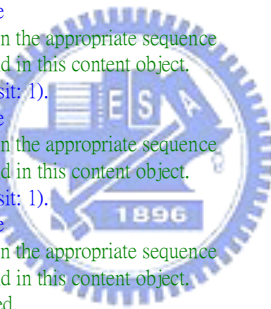✔ LMS Test Course 42 has been completed.

ℹ Starting Step 49 - Take Test Course 43 as Learner, Mary
ℹ ****************************

80

ℹ️ Executing Test Package 43
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 43 has been completed.

ℹ️ Starting Step 50 - Take Test Course 44 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 44
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 44 has been completed.

ℹ️ Starting Step 51 - Take Test Course 45 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 45
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 45 has been completed.

ℹ️ Starting Step 52 - Take Test Course 46 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 46
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 46 has been completed.

ℹ️ Starting Step 53 - Take Test Course 47 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 47
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 47 has been completed.

ℹ️ Starting Step 54 - Take Test Course 48 as Learner, Mary
ℹ️ ****************************

ℹ️ Executing Test Package 48

ℹ️****************************

ℹ️ Content Object 1 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 2 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 3 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

✔️ LMS Test Course 48 has been completed.

ℹ️ Starting Step 55 - Take Test Course 49 as Learner, Mary

ℹ️****************************

ℹ️ Executing Test Package 49

ℹ️****************************

ℹ️ Content Object 1 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 2 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 3 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 4 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 7 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

✔️ LMS Test Course 49 has been completed.

ℹ️ Starting Step 56 - Take Test Course 50 as Learner, Mary

ℹ️****************************

ℹ️ Executing Test Package 50

ℹ️****************************

ℹ️ Content Object 7 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

✔️ LMS Test Course 50 has been completed.

ℹ️ Starting Step 57 - Take Test Course 51 as Learner, Mary

ℹ️****************************

ℹ️ Executing Test Package 51

ℹ️****************************

ℹ️ Content Object 1 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 2 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 6 has been launched (Visit: 1).

ℹ️ Validating content object launch sequence

✔️ The learning object has been launched in the appropriate sequence

✔️ No LMS conformance issues were found in this content object.

✔️ LMS Test Course 51 has been completed.

ℹ️ Starting Step 58 - Take Test Course 52 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 52
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 52 has been completed.

ℹ️ Starting Step 59 - Take Test Course 53 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 53
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 53 has been completed.

ℹ️ Starting Step 60 - Take Test Course 54 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 54
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
✔️ LMS Test Course 54 has been completed.
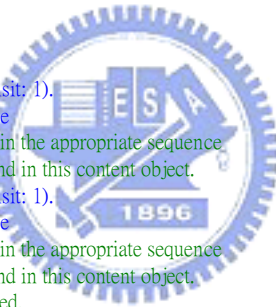
ℹ️ Starting Step 61 - Take Test Course 55 as Learner, Mary
ℹ️ ****************************
ℹ️ Executing Test Package 55
ℹ️ ****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 11 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.
ℹ️ Content Object 12 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✔️ The learning object has been launched in the appropriate sequence
✔️ No LMS conformance issues were found in this content object.

ℹ️ Content Object 13 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 20 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 21 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 22 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 29 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
✅ LMS Test Course 55 has been completed.

ℹ️ Starting Step 62 - Take Test Course 56 as Learner, Mary
ℹ️ *****************************
ℹ️ Executing Test Package 56
ℹ️ *****************************
ℹ️ Content Object 1 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 2 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 3 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 4 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 5 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 6 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 7 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 8 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 9 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 11 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.
ℹ️ Content Object 12 has been launched (Visit: 1).
ℹ️ Validating content object launch sequence
✅ The learning object has been launched in the appropriate sequence
✅ No LMS conformance issues were found in this content object.

Content Object 13 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 20 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 21 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 22 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.
Content Object 29 has been launched (Visit: 1).
Validating content object launch sequence
The learning object has been launched in the appropriate sequence
No LMS conformance issues were found in this content object.

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SCORM Conformance Category

The LMS is LMS CAM 1.3.1 Conformant

The LMS is LMS RTE 1.3.1 Conformant

The LMS is LMS SN 1.3.1 Conformant

Overall Conformance:

The LMS is SCORM 2004 Conformant, according to Conformance Test Suite Version 1.3.2

Successful outcome of this test does not constitute ADL Certification unless the test has been conducted by an ADL Certified Auditor.

85