

# An Example of ADDIE Application on Industry Demand-Driven E-Learning Curriculums

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*Abstract:* -While previous studies have focused on the theories and use of e-learning, little is known about the practical design of e-learning curriculums step by step. This study applied ADDIE model to develop an example for industry demand-driven e-learning curriculums in one international accounting firm. In other words, building an innovative example for the industry-oriented e-learning curriculums is the most important contribution in this study.

*Key-Words:* - Accounting firm, ADDIE, Auditor, E-learning

## 1 Introduction

E-learning has accelerated rapidly in the past two decades. Ample research has reported its potential in increasing learning effectiveness and learner satisfaction in education settings [1]. With the rapid development of e-learning, most enterprises now have a clearer picture of what e-learning is. However, the research focuses on practical design of e-learning curriculums is still limited [2]. Successful introduction of e-learning requires not only construction of software and hardware facilities but also support of multiple measures, including executives' support and commitment, design of proper instructions, introduction of teaching strategies, and assessment by external experts [3]. All these measures should be developed or implemented through cooperation between the academia and the practice. As cases of such

cooperation are still rare in the present, many enterprises have introduced e-learning without sufficient understanding of it. Certainly, the effectiveness of their investment is usually poor [4].

The advancement of information technology has not only changed the business environment also increased the complexity of accounting practice. Over the past few decades, accounting education has not been adequately adjusted to meet changes of the external environment [5]. Most of the accounting teachers and practitioners in Taiwan have thus called for reforms of accounting education [6]. Cheng (2007) proposed that accounting education should be changed from supply driven to demand driven [7]. In other words, accounting education should meet the needs of customers (such as accounting firms). A 2008 report released by PricewaterhouseCoopers (PwC), one of the world's largest accounting firms,

showed that despite economic slowdown around the globe during 2008, PwC enjoyed a total revenue exceeding US\$28.2 billion, a 14% growth from last year [8]. Its revenue from “auditing services” was particularly remarkable, reaching US\$13.8 billion [8]. These statistics indicate that auditing services are an important part in the accounting industry. In order to set up a successful example for auditors on industry demand-driven e-learning curriculums, this study adopted auditors as subjects to develop a standardized process for e-learning curriculums according to ADDIE model.

## 2. ADDIE Model

ADDIE consists of five phases with each phase involving certain goals [9] [10]: (1) Analysis: Determine the instructional content. Context analysis, learner analysis, and task analysis are performed in this phase to confirm the objectives, content of the instruction, and entry behavior of learners; (2) Design: Design instructional activities. Definition of objectives, design of learning content and activities, and compilation of scripts are performed in this phase to develop proper instructional activities; (3) Development: Create the instructional content assets. Development of an e-learning curriculum, putting the curriculum online, and formative evaluation of the curriculum are performed in this phase; (4) Implementation: Implement the developed instructional activities and conduct placement evaluations during the instructional process; (5) Evaluation: Conduct formative and summative evaluations of the effectiveness of the developed curriculum. The five-phase ADDIE instructional design model is illustrated in Figure 1 (see Appendix 1).

## 3. The Example to Develop Industry Demand-Driven E-learning Curriculums

### (1) Subjects

This example was developed and implemented for “auditors” in one international accounting firm in Taiwan. This accounting firm, being a member of an international accounting company, is among the top four accounting firms in Taiwan. It has branches in northern, central, and southern Taiwan and more than 1000 employees, including CPAs, auditors, and assistants. A total of 385 Level I auditors participated in this study as Figure 2 (see Appendix 2).

### (2) The Process to Develop E-learning Curriculums

The curriculum development process is explained as follows:

#### A. Analysis phase

In this phase, the instructional contexts, learners, and tasks were analyzed, respectively. All these analyses were based on interview data. Based on the interview results, four practical instructional cases were developed, including “pre-audit meeting”, “audit practice I”, “audit practice II”, and “post-audit review”. The four instructional cases are shown in Figure 3 to 6 (see Appendix 3).

#### B. Design phase

The results derived from the “analysis” phase were used as a basis for designing the e-learning curriculums in this phase. The curriculums were designed according to the various situations that auditors would encounter in practice. Multimedia was used to create learning contexts based on real-life conditions. Questions were designed separately in four instructional cases to lead learners to learn through interactions. Instructions would not be

lecture-based but be given through issue discussion led by the instructor (actor). Learners will be more interested in learning through brainstorming. Through dialogue and interaction between roles in the curriculums, learners were expected to increase their impression of the case content and actively construct their own knowledge. Five learning functions were designed in each instructional case as Figure 7 (see Appendix 4), including “Learning Goals”, “Background”, “Situating Film”, “Frequently Asked Questions (FAQ)”, and “Evaluation”.

### C. Development phase

This phase involved production of e-learning materials, development of the e-learning curriculum, and formative evaluation of the e-learning materials and curriculum. The related e-learning materials and curriculums were presented by a film-style as Figure 8 (see Appendix 5). The formative evaluation of the e-learning materials was conducted based on “expert review”. Two groups of experts were invited to conduct the evaluation. One consisted of four accounting experts, and the other consisted of three e-learning experts. They were responsible for checking if the developed curriculums complied with the accounting standards and e-learning instructional design principles respectively.

### D. Implementation phase

Before implementing the developed e-learning curriculums, they were first introduced to learners and tried to understand their entry perceptions, attitudes, and knowledge (placement evaluation). For entry perceptions and attitudes, this study adopted the Need for Cognition scale introduced by Cacioppo & Petty (1984) [11] as well as the Attitude toward Corporate E-learning scale by Fishbein & Ajzen (1975) [12]. All items were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5

(strongly agree). As for entry knowledge, this study adopted the open-ended scale on Auditors’ Prior Knowledge which was designed according to the e-learning curriculums developed in this study. The scale of Auditors’ Prior Knowledge was evaluated by two accounting experts and was also revised according to their opinions. The related scales were administered to Level I auditors in this case international accounting firm in Taiwan during Sep to Nov 2010. All the collected open-ended responses were scored by two manager-level auditors with more than seven years of practical experiences.

After learners’ entry perceptions, attitudes, and knowledge were surveyed, the four instructional cases were implemented for 385 auditors from Dec 2010 in this case accounting firm.

### E. Evaluation

In this study, formative evaluation and summative evaluation for auditors were both adopted. In the formative evaluation phase, auditors’ learning process was observed continuously and feedbacks were collected irregularly during implementation of e-learning program. Based on learners’ feedbacks, the curriculum was further improved to meet their needs. As for the summative evaluation phase, evaluations of each instructional case were administered to auditors who have answered every evaluation question as figure 9 to 10 (see Appendix 6). Furthermore, the scale of Auditors’ post Knowledge will also be implemented for auditors during Nov to Dec 2011 to evaluate if their knowledge was influenced by the e-learning curriculums.

## 4. Conclusions

Although increasing e-learning curriculums have enhanced our understanding of how technology can support learning, most of the researchers do not

take into account the practical design of e-learning curriculums [2]. This study extends previous research by developing an example for industry demand-driven e-learning curriculums under ADDIE. As with e-learning curriculums successfully builded in this study, learners are able to utilize the technology tools to restructure their learning process in terms of timing, delivery, and accessibility [13] [14].

E-learning is a very suitable form of education for the modern age. It offers the possibility of studying at home or in a virtual classroom without time pressure [15]. While designing and developing e-learning curriculums, it must be aware that e-learning is a unique learning process with its own rules within the frame of general didactic rules [16].

In spite of adoption of e-learning is all-pervading, successful introduction of practical design on e-learning curriculums is still limited [2]. This study presented a complete example to develop industry demand-driven e-learning curriculums for “auditors” in an international accounting firm under ADDIE model. It is concluded that this example provides a useful tool that can easily be used to design e-learning modules for practice.

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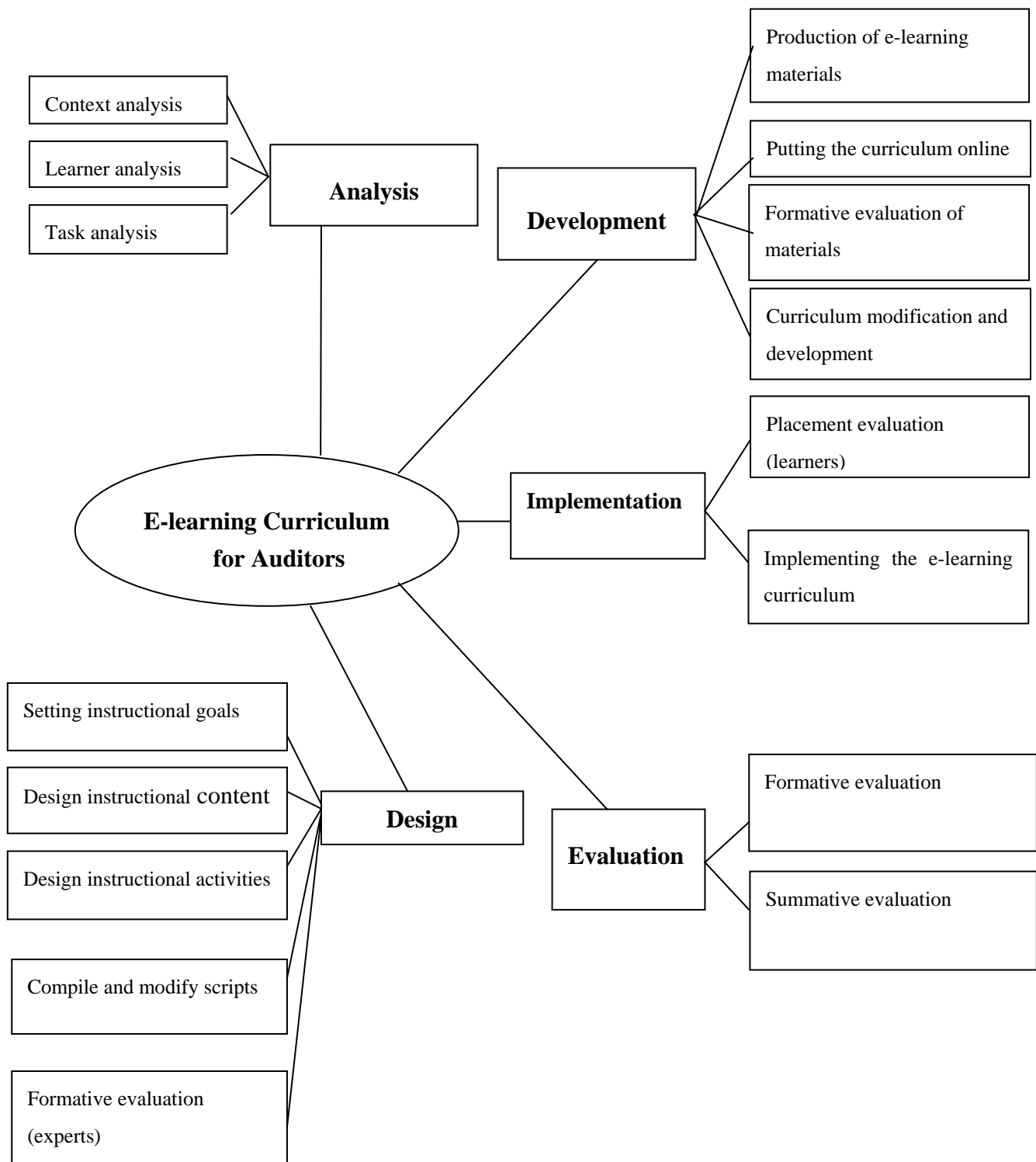
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**Appendix 1**



**Figure 1 ADDIE instructional design model**

### Appendix 2

審計員的日子 您以劉文鄭身分登入 (登出)

m audit ▶ 審計員的日子 ▶ 角色

本地委派的角色 [置換權限](#)

#### 指派在課程: 審計員的日子的角色 ?

角色	說明	用戶
網站管理員	網站管理員通常可以在此網站上的所有課程進行任何事情。	0
課程管理員	課程管理員可以建立新課程，並且參與授課或指派教師。	0
教師	教師可以在課程中執行任何操作，包括修改教學活動以及對學生評分。	0
助理教師	助理教師可以參與課程的教學活動與學生評分，但也許無法變更活動。	0
學生	學生一般在課程中的權限較小	385
訪客	訪客的權限最小而且通常無法輸入任何文字。	0

**Learners (Auditors)** → **學生** (385) → **385 Learners**

[按這裏進入您的課程](#)

Figure 2 385 participants of this study

### Appendix 3

**Case 1:  
Pre-audit  
meeting**



**Figure 3 The picture of case 1**

**Case 2:  
Audit  
practice I**



**Figure 4 The picture of case 2**



**Case 3:**  
**Audit**  
**practice II**



**Figure 5** The picture of case 3

**Case 4:**  
**Post audit**  
**review**



**Figure 6** The picture of case 4

Appendix 4



Figure 7 Five learning functions of each instructional case

Appendix 5



Figure 8 Film-style e-learning materials

Appendix 6



Figure 9 Auditors who got right answer



Figure 10 Auditors who got wrong answer