

# EXPLORING REQUIREMENTS FOR E-LEARNING PROFESSIONALS

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**Abstract:** Rapid progress of IT technology made a new type of online based learning system, called electronic (e) - learning, born, and it is now considered to be a key driving force of next generation for the growth of industry. Recently, the needs for competent professionals who can lead the growth of e-learning industry are recognized to be in pressing. This paper presents requirements which the e-learning professionals, which are instructional designers, developers, and project managers (PM) & consultants, respectively, should be educated and trained to be marketable in competitive e-learning markets. To identify the requirements for each professional group respectively, we first investigated lots of literatures relevant to e-learning, curricula of universities and educational institutions, and job searching websites. Through the investigations, we could single out no small number of items which were considered to be necessary for e-learning professionals, and they were broken down into three categories, which were fundamental, professional, practical requirements. Then they were reviewed by a group of e-learning professionals to see whether they were properly singled out and classified. From this procedure, a phase of Delphi method was used and totally 42 requirements were created. Among the 42 items, to identify requirements especially important for each professional group, respectively, and to estimate the priorities of each item among the items which were selected as requirements, we gathered data through questionnaire survey. The requirements which were presented in this paper will provide useful guidelines or criteria in designing curriculum of e-learning education for e-learning instructional designer, developer, project manager and consultant.

## 1 INTRODUCTION

Advances in networking technology, the explosive growth of the Internet, and the liberalization of telecommunication markets increasingly allow businesses and private individuals to reap the benefits of sophisticated networked computer applications (D.Spinellis et al., 1999), and these kind of evolutions enabled new and interesting designs for the support of traditional learning and for the development of new forms of learning (Kostas Metaxiotis et al., 2001), which is termed e-learning. It provides new opportunities for people to learn without attending classroom of school (Anna Comacchio et al., 2004).

Although the demands of e-learning have been increasing and e-learning can be used in the various fields of industry for either/both educational or/and training purposes (Shirley, 2001; Alstete, 2001), there are many problems to be resolved such as

standardization, technology development, security issues, professional training and education, and the other problems hindering the growth of e-learning industry.

The demands for e-learning professionals underline the need for identifying knowledge, skills, practical abilities and prior experiences which are important for e-learning professionals, and it will surely provide directions or guidelines for education and training of e-learning professionals. In reality, more e-learning professionals are wanted, but we run short of them who are educated and trained systematically. Therefore, Identifying the specific knowledge, skills, practical abilities and prior experiences for e-learning professionals is critical. However, no analysis of them for e-learning professionals has been undertaken as of yet.

The purpose of this research is to identify knowledge, skills, practical abilities and prior experiences required for e-learning professionals for

the accomplishment of their job-related tasks. In this paper, we define the required knowledge, skills, practical abilities and prior experiences as requirements in shortly. The requirements identified, which are the results of this research, could be used in determining what kinds of knowledge, skills, practical abilities and prior experiences should be included in the curriculum of e-learning education programs and be educated and trained to be a competent worker for e-learning company. And also the results could be used as a guideline in designing a systematic educational program for e-learning professionals in Universities or other specialized e-learning institutes.

Generally e-learning professionals can be classified into Instructional Designer, Developer, Subject Matter Expert (SME), Interface Designer, Project Manager(PM)/Consultant, and Administrator. In this paper, we consider only Instructional Designer, Developer, and Project Manager (PM)/Consultant.

## 2 ANALYSIS OF REQUIREMENTS FOR E-LEARNING PROFESSIONALS

To identify the requirements that e-learning professionals should have, we investigated lots of literatures relevant to e-learning, curricula of 17 universities, 7 public or private educational institutions, and 5 job-search websites. Through the investigations, we could additionally recognize the current educational situation of e-learning as well as identify the requirements.

Mentioning, firstly, the current educational situation of e-learning, we could not find any university's e-learning curricula, but we could find several e-learning related courses of study which were mostly opened in school of educational technology or education. While some educational institutions were running programs for e-learning professionals, all were short-term curriculums lecturing for about eight weeks, which would be not enough to learn and train the needed requirements. When we investigated the websites for job-search, we could see that there are many companies which are recruiting e-learning professionals and the demands for them have been rapidly increased. Saying decisively about the current educational situation of e-learning, there were no systematic educational programs in spite of the soaring increase of demand for qualified e-learning professionals.

Through our investigations, we could identify the necessary requirements, and it was collectively composed of items which are technical and non-technical. The technical requirements were almost concerned with IT skills such as proficiency in computer and its applications, coding, networking. The non-technical materials were theories and knowledge that e-learning professionals surely have to know to perform their tasks successfully, and it contributes to the creative and effective performance of tasks. And human skills, such as inter-personal relations, cooperative organization skills, and positive working attitude, were recognized to be essential qualifications for team working.

To be a qualified professional, he/she must be balanced technically and non-technically (Kai et al., 2002), to say, must know theories and principles well and also should be able to apply it to practical fields.

## 3 RESEARCH METHODOLOGY

The requirements could be classified into three categories, which are basic knowledge and skills relevant to computer and distance education, professional knowledge and skills relevant to e-learning, and abilities that they can adopt the knowledge and skills of the previous two categories to practical industry field.

The created 42 requirements were broken down into 3 categories, which are 10 fundamental, 23 professional, and 9 practical requirements. Although the lists of requirements are composed of items which are generally recognized to be essential to e-learning professionals, the task domains of e-learning instructional designer, developer, and PM & consultant are quite different as described in the first section, and it is difficult to cover all knowledge and skills perfectly. Requesting opinions and obtaining consensus from the professionals relevant to e-learning would help get validity of the research results. To get data necessary for this study, a phase of Delphi method was used. The research processes used in this study can be outlined as the following steps.

- Step 1: Create a full list of requirements.
- Step 2: Prepare a questionnaire to get data.
- Step 3: Carry out the survey.
- Step 4: Integrate and analyze the survey results.

The details for each above step are as follows. To create a full list of requirements for e-learning professionals in Step 1, the researches which were

already mentioned in the previous section 3 and 4 were performed, and then we asked a working group of an e-learning company in Korea to check each item of the list and to contribute to the creation of a full list. In this procedure, simplified Delphi (Sehun Kim, 2002) was performed. In step 3, the respondents were asked to check the items which were thought to be important for e-learning instructional designer, developer, and PM & consultant, respectively. After checking the items, they were also asked to rank the checked items within each category in consideration of its relative importance for each professional group respectively. The questionnaire was sent to 650 people, who are relevant to e-learning, by e-mail and we got 59 returned e-mails, 9.1 percent responsive rate. We got in contact with many of them by phone asking to reply the questionnaire to improve the responsive rate, but most questionnaires were ignored like spam mail and refused to reply. In step 4, the returned questionnaires were analyzed through the following procedures. First, we identified the requirements of each category for the three professional groups, respectively.

## 4 DISCUSSIONS ON THE SURVEY RESULTS

4.1, 4.2, and 4.3 shows the survey results of this study, which indicate which items are required for e-learning instructional designer, developer, and PM & consultant, respectively, and also which items among the requirements should be more importantly considered for competent e-learning professional.

### 4.1 Discussions on Fundamental Requirements

Instructional Designer has 7 requirements. (1) WBL Programming and Tools, (2) Understanding Computer, (3) Knowledge of Visual Communication Design Theory, (4) Human Relations & Interpersonal Communications, (5) Knowledge of Computer Operating Systems (OS), (6) Knowledge of Computer Networks, (7) Leadership.

Instructional Developer has 9 requirements. (1) Human Relations & Interpersonal Communications, (2) WBL Programming and Tools, (3) Knowledge of Distance Education, (4) Knowledge of Visual Communication Design Theory, (5) Understanding Computer, (6) Computer Programming, (7) Knowledge of Computer Operating Systems (OS),

(8) Knowledge of Computer Database Systems (DB), (9) Knowledge of Computer Networks.

PM & Consultant has 10 requirements. (1) Leadership, (2) Human Relations & Interpersonal Communications, (3) WBL Programming and Tools, (4) Knowledge of Visual Communication Design, (5) Theory, (6) Understanding Computer, (7) Computer Programming, (8) Knowledge of Distance Education, (9) Knowledge of Computer Database Systems (DB), (10) Knowledge of Computer Operating Systems (OS), (11) Knowledge of Computer Networks.

### 4.2 Discussions on Professional Requirements

The two professional groups, except for instructional developer, included all 23 items, but the priorities of each item are different.

Instructional Designer has 23 requirements. (1) Knowledge of Instructional Design Theories, (2) Knowledge of Instructional, Learning and Cognition Theories, (3) Understanding Instructional, (4) Design Strategies and Tactics, (5) Understanding Corporate Education, (6) Understanding Andragogy for Lifelong Education, (7) Knowledge of Instructional Message Design, (8) Contents Design and Development, (9) Web based Curriculum Design, (10) Interface Design, (11) Learner Analysis Ability to Evaluate Training and Performance, (12) Knowledge of Instructional Media and Programs Evaluation, (13) Knowledge of Learner Motivation in Instructional Design, (14) Ability to Analyze Needs Assessment, (15) Ability to Analyze Task/Contents, (16) Ability to Establish Individualized Learning System, (17) Risk Analysis, (18) Understanding Blended Learning, (19) Understanding Human Resource Development and Training, (20) Management of e-Learning Development Project, (21) Knowledge of Computer Security and Privacy, (22) Knowledge of Performance Technology and Consulting, (23) Knowledge of e-learning Management.

Instructional Developer has 7 requirements. (1) Contents Design and Development, (2) Knowledge of Instructional Design Theories, (3) Web based Curriculum Design, (4) Interface Design Understanding Instructional Design Strategies and Tactics, (5) Understanding Blended Learning, (6) Knowledge of Computer (7) Security and Privacy

PM & Consultant have 23 requirements. (1) Management of e-Learning Development Project, (2) Ability to Analyze Needs Assessment, (3) Ability to Analyze Task/Contents, (4) Knowledge of

Learner Motivation in Instructional Design, (5) Understanding Instructional Design Strategies and Tactics, (6) Understanding Human Resource Development and Training, (7) Risk Analysis, (8) Understanding Blended Learning, (9) Ability to Establish Individualized Learning System, (10) Knowledge of Instructional Design Theories, (11) Knowledge of Instructional Learning and Cognition Theories, (12) Understanding Corporate Education, (13) Understanding Andragogy for Lifelong Education, (14) Knowledge of Instructional Design Theories, (15) Learner Analysis (16) Interface Design, (17) Ability to Evaluate Training and Performance, (18) Knowledge of Instructional Media and Program Evaluation, (19) Contents Design and Development, (20) Web based Curriculum Design, (21) Knowledge of Performance Technology and Consulting, (22) Knowledge of Computer Security and Privacy, (23) Knowledge of e-Learning Management

### 4.3 Discussions on Practical Requirements

In practical requirements, "Optimum Learning Environment Design" and "Instructional System Development" are considered to be the most important items for both instructional designer and PM & Consultant, and these are highly related to the own tasks of both professionals.

Instructional Designer has 9 requirements. (1) Instructional Systems Development, (2) Optimum Learning Environment Design, (3) Training Program Design, (4) Implementation of e-LMS and LCM, (5) e-learning Consulting, (6) Educational Software Design and Development, (7) Ability to Prepare Storyboard, (8) Ability to Prepare Proposal of e-Learning Program, Development, (9) e-Learning Internship.

Instructional Developer has 5 requirements. (1) Educational Software Design and Development, (2) Ability to Prepare Storyboard, (3) Training Program Design, (4) e-Learning Internship, (5) Implementation of e-LMS and LCM.

PM & Consultant have 9 requirements. (1) Optimum Learning Environment Design, (2) e-learning Consulting, (3) Instructional Systems Development, (4) Training Program Design, (5) Implementation of e-LMS and LCM, (6) e-Learning Internship, (7) Ability to Prepare Proposal of e-Learning Program Development, (8) Ability to Prepare Storyboard, (9) Educational Software Design and Development.

## 5 CONCLUSIONS

In this paper, to explore the requirements which are important to instructional designers, instructional developers, and PM & consultants, respectively, we investigated the literatures relevant to e-learning, curricula of universities and educational institutions, and job searching websites. Through the survey mentioned at above, 42 items of requirements were identified. We could classify the 42 items into three categories, which are fundamental, professional, and practical requirements. Each of the three kinds of professionals has their own tasks, and they should be balanced both theoretically and practically. Conclusively, the results of this research are expected to help organizations employ qualified and competent experts for e-learning implementations, to help individuals determine which educational factors should be educated and trained to be a competent e-learning professional, and mainly to contribute to create an educational program for the development of e-learning professionals.

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