

A CRITICAL REVIEW OF INSTRUCTIONAL DESIGN PROCESS OF DISTANCE LEARNING SYSTEM

Dr Muhammad Ajmal CHAUDRY
Department of distance & non formal education
Allama Iqbal Open University
Islamabad PAKISTAN

Fazal-ur-RAHMAN
Department of early childhood & elementary teacher education
Allama Iqbal Open University
Islamabad PAKISTAN

ABSTRACT

Instructional design refers to planning, development, delivery and evaluation of instructional system. It is an applied field of study aiming at the application of descriptive research outcomes in regular instructional settings. The present study was designed to critically review the process of instructional design at Allama Iqbal Open University (AIOU). It was survey study. Population of the study consisted of 120 academicians of different academic department of AIOU. Survey was conducted through questionnaire for academic staff. It was revealed that need assessment is not done before conceiving the outlines of a course. Also the course did not contain sufficient activities, picture and illustrations. It was also found that did not confirm the course objectives. The study recommended that proper of the course writers for distance learning may be arranged.

Keywords: Instructional design, distance learning, instructional model,
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INTRODUCTION: Instructional Design in Distance Learning

By design one means the style or plan of teaching. It is the blue print of teaching method. Glossary of term commonly used in distance education IGNOU (1997, p.29) defines instructional design as "It is generally refers to planning, development, delivery and evaluation of instructional system." Romiszowski (1989) defined it as key to designing materials and messages that may more effectively cross the interface between 'information' as it exists and is structured 'out there' in the world at large, and 'knowledge' as it is formed 'in here' in the mind of individual learner. While Braden (1996) refers it as process of improving quality of teaching and learning. In words of Torsten & Postlethwaite (1994, p.28) "the term instructional design describe the complete process of analyzing what is to be taught, how it is to be taught, conducting tryout and assessing whether learner learn". Broderick's (2001) says that it is the art and science of creating an instructional environment and materials that will bring the learner from the state of not being able to accomplish certain tasks to the state of being able to accomplish those tasks. It is based on theoretical and practical research in the areas of cognition, educational psychology, and problem solving. Instructional design is a systematic approach to course development that ensures that specific learning goals are accomplished.

It is an iterative process that requires ongoing evaluation and feedback. Instructional design is a systematic approach to course development that ensures that specific learning goals are accomplished. It is an iterative process that requires ongoing evaluation and feedback. It may be summed up that instructional design is the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

WHY USE INSTRUCTIONAL DESIGN?

The greatest objective of instructional design is to serve the learning needs and success of students through effective presentation of content and fostering of interaction. Smith, 1996 viewed that learning courses are likely to fail if they are delivered as if they were traditional courses.

Similarly, pedagogy must drive the choice of instructional technology, not the other way around (Chizmar & Walbert, 1999). Additional benefits instructional design offers are;

- Compared with a human instructor, technology is less adaptive. Once a plan of integration is implemented, it is less likely to change it according to student's reactions. This is why instructional design plays an important role in bridging pedagogy and technology.
- Subject contents have to be well organized and strategies for teaching via a chosen medium have to be well thought out. Instructional design can help educators making the best use of technology; therefore guarantee a successful integration."
- It provides consistency between various courses developed by various instructors/designers. The general look and process of content exploration is standardized.
- In a classroom, an instructor can adjust "on the fly"...if, during the design process, a concept was not communicated clearly, a classroom instructor can clarify. The design process must anticipate and meet potential concerns/ambiguities...or put another way Instructional design tries to do what the instructor does in a classroom.
- It focuses on the most effective way to present content.
- It begins with the learner and the learner experience.
- Quality of course is ensured through Instructional design - covers all the phases of good development.
- Instructional design gives structure to the student's process of working through course material.
- Creates a transparent process - easier to track and utilize the experiences of development teams (a knowledge management issue).

Instructional design is the systematic specification of instruction to include: objectives, presentation, activities, materials, guidance, feedback and evaluation. It applies learning principles to decisions about information content, instructional method, use of media and delivery system. The goal is to ensure instructional quality, effectiveness, efficiency and enjoyment. The purpose of instructional design is to maximize the value of instruction for the learner—especially the learner's time.

Instruction provides a concentration of life-experience into a shortened, optimized time frame and provides feedback to ensure that learning objectives are actually being achieved. Ideally, instruction allows the knowledge, wisdom and skills of an instructor-author to be personally communicated or demonstrated to a learner. The main purposes of the Instructional design include:

- identifying instructional outcomes
- developing instructional content
- and establishing how instructional effectiveness will be evaluated.

STAGES OF INSTRUCTIONAL DESIGN

Shambaugh.& Magliaro (2006) identified the following stages of instructional design:

Stage 1: Define Instructional Goals

A goal may be defined as a general statement of desired accomplishment. It does not specify exactly all of the components or steps or how each step will be achieved on the road to accomplishing the goal.

Stage 2: Conduct An Instructional Analysis

Identify what learning steps will be involved in reaching the goal. This is done through a task analysis, which identifies each step and the skills needed in order to complete that step, and an information processing analysis, which identifies the mental operations the learner needs to employ in performing that skill. The task analysis is performed by asking "What are all of the things the student must know and/or be able to do to achieve the goal?"

Stage 3: Identify Entry Behaviors/Learner Characteristics

Having determined via the instructional analysis which steps and skills the learner must accomplish, it is now necessary to identify the knowledge and skill level that the learner possesses at the outset. Although there may be pronounced differences from learner to learner in their knowledge and skill levels, the instruction must be targeted as much as possible to the level of the learners' needs.

Stage 4: Develop Performance Objectives

At this stage, it is necessary to translate the needs and goals into objectives that are sufficiently specific to guide the instructor in teaching and the learner in studying. In addition, these objectives form the blueprint for testing as a means of evaluating both the instruction and the learning that has occurred.

Stage 5: Select an Instructional Method

The purpose of selecting an instructional method is to identify and employ teaching strategies and techniques that most effectively achieve the performance objectives. Current educational theory and research support the use of instructional methods that make students active learners.

Stage 6: Assemble instructional material

Once the instructional methodologies have been identified for each objective or unit of content, it is important to assemble the necessary instructional materials. The materials may be in various forms: print, computer, audio, audio-video, etc. Although the necessary instructional materials may already exist, they may need improvement or revision.

Stage 7: Plan and conduct formative evaluation

Formative evaluation, evaluation that occurs from feedback while the instruction is in progress, provides data for revising and improving the instructional materials that were used and those that are yet to be used. It is important to remember that sometimes the plans that look so good on paper actually fail in practice. When possible, test instructional materials with one or a small group of students to determine how students use the materials, how much assistance they need, etc. Considering the teaching methods implemented and the course materials provided are students learning what they should be?

Stage 8: Plan and conduct summative evaluation

Summative evaluation, evaluation that occurs at the end of the instructional effort (unit, course, etc.), provides data on the effectiveness of the instructional effort as a whole. This is the evaluation that provides information on how the whole instructional unit enabled the learner to achieve the objectives that were established at the outset.

INSTRUCTIONAL DESIGN MODELS

There are many instructional design models but many are based on the ADDIE model (Dougles, 2003):

- **ADDIE model:** Perhaps the most common model used for creating instructional materials is the ADDIE Model. This acronym stands for the 5 phases contained in the model:
 - **Analyze-analyze learner characteristics, task to be learned, etc.**
 - **Design-develop learning objectives, choose an instructional approach**
 - **Develop-create instructional or training materials**
 - **Implement-deliver or distribute the instructional materials**
 - **Evaluate-make sure the materials achieved the desired goals**

In the ADDIE model, each step has an outcome that feeds into the subsequent step.
Analysis > Design > Development > implementation > Evaluation

- **Instructional Development Learning System (IDLS)**
- **Another model of instructional design is called Instructional Development Learning System (IDLS).** Peter J. originally published this model in 1970 IDLS model consists of the following components:
 - **Design a Task Analysis**
 - **Develop Criterion Tests and Performance Measures**
 - **Develop Interactive Instructional Materials**
 - **Validate the Interactive Instructional Materials**
- **Rapid prototyping:** A sometimes utilized adaptation to the ADDIE model is in a practice known as rapid prototyping. However, rapid prototyping is considered a somewhat simplistic type of model. At the heart of instructional design is the analysis phase. After thoroughly conducting the analysis; choose a model based on findings. That is the area where most people get snagged; they simply do not do a thorough enough analysis.

Proponents suggest that through an iterative process the verification of the design documents saves time and money by catching problems while they are still easy to fix.

This approach is not novel to the design of instruction, but appears in many design-related domains including software design, architecture, transportation planning, product development, message design, user experience design, etc.

- Dick and Carey system approach model: Another well-known instructional design model is The Dick and Carey Systems Approach Model. The model was originally published in 1978 by Walter Dick and Lou Carey. Dick and Carey made a significant contribution to the instructional design field by championing a systems view of instruction as opposed to viewing instruction as a sum of isolated parts. The model addresses instruction as an entire system, focusing on the interrelationship between context, content, learning and instruction. According to Dick and Carey, "Components such as the instructor, learners, materials, instructional activities, delivery system, and learning and performance environments interact with each other and work together to bring about the desired student learning outcomes" The components of the Systems Approach Model, also known as the Dick and Carey Model, are as follows.
 - Identify Instructional Goal(s)
 - Conduct Instructional Analysis
 - Analyze Learners and Contexts
 - Write Performance Objectives
 - Develop Assessment Instruments
 - Develop Instructional Strategy
 - Develop and Select Instructional Materials
 - Design and Conduct Formative Evaluation of Instruction
 - Revise Instruction
 - Design and Conduct Summative Evaluation

With this model, components are executed iteratively and in parallel rather than linearly.

- OAR model: Objectives-Resources-Activities (OAR) model is an instructional design model created for a specific context: distance education courses delivered through a learning management system (LMS) in higher education. It was developed in 2008 at Utah State University at the Faculty Assistance Center for Teaching by George Joeckel, Joel Gardner and Tae Jeon. The OAR model was developed to meet four criteria:
 - maintain a strict focus on the learning system context .
 - create a simple graphic-based aid which facilitates communication among development stakeholders
 - remain inclusive by avoiding the use of jargon
 - represent the basic order of operations in the development process for an online course.

Developing a model for a targeted context is considered by many researchers to be critical for success. Edmunds, Branch & Mukherjee (1994) stated that concepts, theories and models have an ecology, a context within which they function. Importing a theory or model from a significantly different context, without attention to contextual differences, violates this ecology, and subsequently results in inefficient solutions to instructional problems. Tessmer & Richey (1997) described the context of a learning system as "those situational elements that affect both the acquisition and application of newly acquired knowledge, skills, or attitudes (p.87)."

They identify the social, physical, and political elements which combine to create "a multilevel body of factors in which learning and performance are embedded". The OAR model was created to assist instructional designers working in higher education communicate with stakeholders during the development of online courses delivered through a LMS. The primary stakeholder is the instructor developing the course. This person provides all of the course content and oversees the course's delivery. The term "Subject Matter Expert/Facilitator (SME/F)" was created to represent this individual's context-specific scope of responsibilities. The OAR model avoids using jargon in order to include stakeholders that do not have a knowledge of the terms specific to instructional design in this context.

COMPONENTS OF AN INSTRUCTIONAL DESIGN IN DISTANCE LEARNING

Instructional design comes into action whenever any instructors try to identify the areas to be taught to bring about the desired learning outcome in students. Instructional design process must address following key questions (Department of Agriculture, 2004).

- What is the need for the educational program?
- What are the goals and objectives?
- Who will be the learner?
- What will be the subject content?
- What teaching method and media will be used?
- How will learners be assessed?
- How with the course or lesson be evaluated with a view to improvement?

These key questions reflect seven components of instructional design process which are given below (Department of Agriculture, 2004):

Need Assessment

Need assessment is done before starting design process. Need assessment determines why the instruction is required. Need is defined on the basis of information emerging from existing data from survey results, focus groups and case studies.

Audience Analysis

At the onset of instructional design process an audience analysis need to be conducted. It is bases on students who have taken similar distance education courses. Audience is analyzed into following items.

Demographics

It includes age distribution and educational level distribution

Geographic Location

It includes analysis of proximity of audience to student support services.

Goals and Objectives

Goals and objectives structure's plan of action and important because they help instructional designers and instructors focus on what the important content is for a course. They provide direction on how to assess student's abilities (Department of Agriculture, 2004).

Learners

The learners may be kept in mind when designing a course.

Teaching methods and Media

A course would provide a variety of media and teaching methods for students. The medium choice should come after selection of content. The most striking difference between the traditional classrooms and distance education is in the area of communication and interaction in distance education environment.

Assessment and Evaluation

To effectively assess learner's knowledge or skill the assessment must be based on the learning objectives.

FORMAT OF INSTRUCTIONAL DESIGN

Rowntree (1979) presented a format of instructional design in distance learning as follow:

- Introduction.
- Overview of entire section.
- What you have to do tasks.
- Objectives of the section.
- Student Profile.
- Aims.
- Constraints.
- Select content.
- Decide sequence.
- Write up.
- Assessment.
- Evaluation.

On the other hand, Koul (1995) suggested following aspects for designing a course in distance learning:

- Educational objectives
- Defining objectives
- Resources & Constraints.
 - Media.
 - Language
 - Finance
 - Manpower
 - Time
- Selection criteria
- Alternate methods of meeting objectives
- Alternate subject mater.
- Choice of media.
- Development, feedback and evaluation.

INSTRUCTIONAL DESIGN PROCESS AT ALLAMA IQBAL OPEN UNIVERSITY (AIOU)

The Allama Iqbal Open University was established in May, 1974, with the main objectives of providing educational opportunities to masses and to those who cannot leave their homes and jobs.

It has opened up educational opportunities for the working people and has provided access to the females on their door steps. (AIOU,2010). It was second Open University in the world and first in Asia and Africa. AIOU comprised four faculties namely: Faculty of Education; Faculty of sciences; Faculty of social sciences and Humanities and Faculty of Arabic and Islamic Studies

The university has its own instructional design process. For the development of courses there are committee of courses at the department level and the faculty board at faculty level. The financial decisions of these committees are sent to the academic planning and development committee and their decision about media and research are sent to the research and technology committee. After processing, the decisions are forwarded to the academic council and executive council for final approval and implementation (Allana, 1986).

AIOU is a distance learning institute using multi-media approach. Main components of the university are:

- Correspondence package which includes self-learning printed text and supplementary material.
- Radio and television broadcasts
- Tutorial instruction
- Course assignment

Course development process at AIOU comprises the following steps (Rashid, 2000):

- Need assessment of target population.
- Preparation of Schemes of studies
- Keeping the course outlines at par with other formal courses.
- Formulation of course teams.
- Meeting of committee of courses.
- Approval from faculty board.
- Getting approval from research & educational technology committee.
- Presentation of outlines in Academic Planning and Development Committee for approval.
- Final approval from Academic Council.
- Monitoring of Writers.
- Reviewing the material.
- Sending material to bureau of AP&CP.
- Coordination with the course editor, designer and illustrator.
- Forwarding material to print unit through AP&CP.
- Final proof reading of press copy.
- To O.K. for mailing after printing of material.

OBJECTIVES OF THE STUDY

Objectives of the study were to:

- Examine the instructional design process of Allama Iqbal Open university
- Identify problem in the process of instructional design
- Propose a model of instructional design

PROCEDURE OF THE STUDY

Survey of related literature in the form of books, periodicals, research reports was undertaken to develop a framework for the tool of study. Questionnaire was used to collect data from the population of the study. For purpose of data collection 120 academicians of different department of Allama Iqbal Open university was taken into account. The questionnaire was developed on five point likert scale ranges from strongly agreed to strongly disagree. The questionnaire was professionally vetted before administration.

DATA ANALYSIS

Data collected through instrument was tabulated and analyzed using percentages and mean. On the basis of analysis of data, conclusions were drawn and recommendations were made

Table: 1
Summary of responses of academicians

S.No	Statement	Frequency & Percentages					Mean
		SA	A	UNC	DA	SDA	
1	Scheme of studies are developed on the principle of self learning.	23	33	11	12	7	3.6
		27	38	13	14	8	
2	Objectives of the course are clear.	27	31	2	18	8	3.6
		32	36	2	21	9	
3	Need assessment is done before conceiving the outlines of a course	6	10	51	9	10	2.9
		7	12	59	10	12	
4	Course fulfills the needs of the students.	27	32	18	6	3	3.9
		31	37	21	7	4	
5	Language of the course is simple and understandable to the students.	21	43	7	4	11	3.7
		24	50	8	5	13	
6	Activities are developed keeping in view the course objectives.	3	6	6	39	32	1.9
		4	7	7	45	37	
7	Course involves students into learning.	21	37	5	12	11	3.5
		24	43	6	14	13	
8	Course contains proper indication about media and tutorial support.	10	14	9	41	12	2.6
		12	16	10	48	14	
9	Length of each unit in the course is suitable.	12	35	9	18	35	2.9
		14		10	21	14	
10	Content of the course is properly sequenced.	19	30	12	15	10	3.4
		22	35	14	17	12	
11	Course writers are trained in writing for distance education.	6	9	22	31	18	2.5
		7	10	26	36	21	
12	Introduction of the unit motivates students for further learning.	11	38	6	18	13	3.4
		13	44	7	21	15	
13	Course contents are divided into sections and sub sections.	29	22	10	19	4	3.5
		35	26	12	22	5	
14	Self assessment questions confirm the objectives of the course.	5	8	9	41	23	2.2
		6	9	10	48	27	
15	Pictures and illustrations are provided into the text.	1	5	9	50	21	2.0
		1	6	11	58	24	
16	Summary and bibliography is properly placed in course	31	15	10	17	13	3.4
		36	17	12	20	15	
17	Course follows the writing style of distance education.	23	30	8	15	10	3.5
		27	35	9	17	12	
18	Each unit covers a complete topic.	17	29	5	18	17	3.1
		19	34	6	2	20	

Table revealed some of key facts about the course design process. The respondents viewed that:

- Need assessment is not done before conceiving the outlines of a course
- Self assessment questions did not confirm the objectives of the course.
- Pictures and illustrations are not sufficiently provided into the text
- Course writers are not trained in writing for distance education.
- Course did not contain proper indication about media and tutorial support.
- Activities were not developed keeping in view the course objectives.

Table: 2
Summary of the suggestions by the academicians

S.N	Suggestion	Percentage
1	Proper time may be allocated for course development	90
2	Need assessment may be done before writing of any course.	82
3	Multi-media support is needed for all courses	77
4	Course content may be presented in an interactive way	64
5	Proper training may be arranged for writers of distance learning.	62
6	Sufficient activities may be placed in each unit of the course.	51
7	Self assessment questions may be relevant to course objectives	49

FINDINGS AND CONCLUSIONS

Majority of respondent are of the opinions that schemes of studies are developed on principle of self learning, objectives of the course are clear, content are simple easy to understand and useful for students needs. Activities are placed properly in the text. Self assessment exercises are properly incorporated in the text.

Summaries are rightly placed in the text. Sequence of the content is adequate, courses are at par with the courses of formal system, length of each unit is suitable. However, majority of the respondents are of the view that need assessment is not conducted before conceiving the outlines of the courses. Media indication in the text is not proper. Pictures, maps and illustrations are not sufficient in the text to illustrate multitude ideas.

Keeping in view of the analysis of the instructional design at AIOU, the researcher proposed a model of instructional design for open learning (Annexure-1). This model may be adopted for distance learning.

RECOMMENDATIONS OF THE STUDY

The findings of this study provide enough suggestions for improvement of instructional design in distance learning followed by AIO. These are:

- Need assessment may be conducted before writing of any course.
- Meetings of statutory bodies may be held properly and at least quarterly in a year.

- Multimedia support, i.e. audio & video cassettes & computer diskettes may be provided alongwith study material.
- Illustrations and self assessment questions may be incorporated in each unit keeping in view the objectives of the course.

BIODATA and CONTACT ADDRESSES of AUTHOR/S



Dr Muhammad Ajmal **CHAUDRY** is born in 1968 in a remote village of Pakistan. I hold Ph.D in Education. My carrier spans over 16 years with a vast experience in administration, teacher training, curriculum development, policy planning, measurement and evaluation. Starting his career as a teacher at secondary school in 1993. He joined Allama Iqbal Open University where he initially served as Assistant Regional Director, now serving as Lecturer, Department of Distance Non-formal and Continuing Education, Faculty of Education Allama Iqbal Open University, Islamabad. He Has been providing consultancy services to a number of national and international organizations of research and development and the Federal Ministry of Education. My research activities consisted of a wide range area such as Teacher Training, Science Education, Total Quality Management (TQM) in Education and curriculum Development, Attitudinal Psychology, Comparative Education and Assessment. Recently he completed as much as 3 Projects pertaining to teaching learning process, presented 5 papers in national conferences on education, capacity building and quality enhancement in education as key note speaker.

Dr Muhammad Ajmal CHAUDRY
 Department of distance & non formal education
 Allama Iqbal Open University Islamabad PAKISTAN
 Telephone (Office): +92-51-9057246
 Fax: +92-51-9250056
 Mobile: +92-305-5592322
 Email: drajmal@aiou.edu.pk
 URL: <http://www.aiou.edu.pk> StaffDetail.asp?SID=150

Fazal-ur-RAHMAN

Fazal-ur-RAHMAN did his master from University of Peshawar with distinction. My PhD research is on metacognition of science teachers. he started my career as coordination officer in Teacher Training Project (ADB assisted) for two years. Where he associated with a group of experts for devising a national plan of teacher training. In 1999, he Joined Allama Iqbal Open University, Islamabad as lecturer in the department of Teacher education. Areas of interest are teacher training, distance education and science education. Five articles have been published in the area of teacher training, distance education and adult education. Participated in a number of workshops at national and international level on the area of teacher training and instructional design for distance education. Presently working on ICT research in the field of distance education.

Department of early childhood & elementary teacher education
 Allama Iqbal Open University Islamabad Pakistan
 Phone: 92-51-9057268
 Email: fazalaiou@yahoo.com

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(Annexure-1) Proposed Model of Instructional Design for Distance Learning

