Instructional Design System: The Door of Opportunities for Distance Learners?

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Abstract

Instructional design in the field of education has vital significance and maximizes the values of the instructions for the learners. Instructional design includes identifying instructional targets, developing contents, methods and establishing effective learning environment for evaluation strategies. This study aimed to analyze the existing instructional design, to identify the possibilities of innovations and explore the gaps between existing practices and opportunities in instructional design system of Allama Iqbal Open University. The results of the study indicate that self study material is provided and creativity is maintained in learning activities. Broadcast media, e-learning programmes and research activities are being enhanced. Findings suggest that e-learning and e-assessment format could be launched. Broadcast channels can be established, possibilities are available to study the instructional design of other institutions. Available resources can be utilized, generated and there is possibility of developing monitoring system for accomplishing objectives and designing the future vision of instructional design.

Keywords: Distance education, Instructional design, Educational technology, Quality education, Learning opportunities.

Introduction

Education is a basic need of any social, cultural and economic developmental plan. It is a basic human right, nations plan their socio-economic developments based upon well educated masses. The fundamental purpose of education is to search the truth and develop the mental and physical qualities of man in such a manner that the probabilities of the humans may be comprehended.[1] Education promotes standards of living and guides everyone towards the right path of progress and prosperity. The vital endeavor of education is to develop an impartial and organized

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character of the human being and a tool to develop a nation.[2] Today the education is considered as one of the dynamic means for socio-economic transformation and improvement. It is a fundamental requirement of the progress in all intellectual, social and economic plans.[3] Thus education is necessary for developing universal human values and promotion of the human resources. The objectives of the education are to achieve if there is a strong, systemic, up to date and scientific approach in education system.[4]

For the attainment of these determent educational objectives different strategies are designed and launched in education systems. Education system has different components and integrated to one another for multi dimensional objectives. The instructional design is one and major amongst these mechanisms and components of education system.

Instructional Design

Education is a basic need that every nation attempts to educate its future generation, education systems are framed and launched to attain educational objectives of the nation.[5] The intrinsic human value of education is its ability to add meanings, values, knowledge, skills and competencies.[6] Instructional design describes the method concerned in systematic planning of instruction at the very basic stage.[7] It is an approach, methodology and philosophy, which has been utilized to transfer knowledge, skills and courseware characteristics to learners.[8] Instructional design is the science of creating detailed specifications for the analysis, design, development, implementation and evaluation of subject matter at all levels of education. Instructional design is the analysis of level of interaction, reinforcement, branching learning needs and systematically frame of instruction.[9] The instructional designers have frequently used instructional tools as a means for rising instruction.

According to Reigeluth, instructional design is an area of human experience, skills, knowledge and is concerned with one's ability to cope with one's environment and needs.[10] Instructional design system is a mixture of thoughts in organizational development, learning theory and instructional technology which coordinate all components of education system for consistent educational approach.[11] It is the method to translate the doctrines of instruction and learning into strategies for the activities and instructional materials.[12] It is the practice of maximizing the effectiveness, efficiency, appeal of instruction and other learning experiences.[13] Instructional design in distance

education as it is generally refers to planning, development, delivery and evolution of instructional system.[14] Usually in distance education print and non-print material is delivered through multimedia approach.

Instructional Design Models

There are numbers of instructional design's models which have common phase's (a) analysis, (b) design, (c) development, (d) implementation and (e) evaluation. These models present flexible and vibrant strategies use for efficient and well-organized instructions. In ADDIE model the design phase utilizes the information gained from study or analyses and permit in support of a strategy to have effect.[15] The purpose of this is to expand the goals during the analysis. Development enhances the design and analysis stages and links the material with instructional methodology. Assessment procedure is the worth, value, effectiveness and efficiency of the instructions.

Dick and Cary Design model is appropriate to utilize the available resources. It is a straight forward linear process which allows a planned course to advance the instruction through the identification of basic skills and behaviors of participants. This model need not necessitate a prescribed requirements analysis to be carried out but let for the skills and knowledge of an attending group to be analyzed. Criterion referencing permits in support of instructional aims and goals are developed as of what is essential of the learners in experimental atmosphere.[16] As Shambaugh and The effective release of the instructional materials must help the educational outcomes, to encourage the transfer skills and knowledge to the students.[17] Morrison, Ross, and Kemp model[18] comprises different connected steps. At first stage lesson is identified, specific relevant goals are determined, characteristics of learner are examine, identify the contents of subject and to analyze task oriented elements.[19] This model maintains the logical learning, plan the delivery of instructions, develop instruments for evaluation and supportive learning activities are structured for distance learners. Smith and Ragan model[20] of instruction is also comprised upon the systematic designing approach. This approach has three phases: (i) Analysis which is related to learners, learning material and activities of learning. (ii) Strategy includes organizational, management and delivery system of instructional design. (iii) Evaluation covers formative and summative evaluation of all components of the instructional design.[21]

Attention, Relevance, Confidence and Satisfaction (ARCS) Model helps the educators in a systematic way to analyze the motivation of learner, design tactics of motivation which are closely related with the particular domains of motivational problems interrelated with the strategies of teaching and learning.[22] The instructional design process is based upon four steps: (a) arousing interest which means gain attention, (b) creating relevance, (c) developing an expectancy of success which is simply a confidence, and (d) produce satisfaction or rewards.[23] The motivational intercession of ARCS model enables the teachers to support efficiently and effectively to the motivational level of students.[24]

ASSUR model comprises upon six steps of instructional guide which assists in planning and delivering technological supported lessons and it greatly focus to address the needs of learners.[25] This model presumes that instructions should not be delivered by lecture method. It is helpful particularly in designing online courses. It lays emphasis upon to teach students by using different styles of learning and conduct interaction environment. The Acronym of ASSURE stands for Analyze leaner, State learner, Select methods, media and materials, Utilize media and materials. Require learner participation and Evaluate.[26] This model uses three phases, first phase involves assessment of being performed needs, the second phase is a design phase and third phase is instructional development and implementation phase.[27] These all phases incorporate evaluation process. It is appropriate for creating stimulation. Analysis of needs identifies objectives and goals of the program. The program of design depends upon the outcomes of need analysis. The development stage implies that how program will set about and implement in the actual execution of program. The process of evaluation and revision is remained continued.[28]

Knirk and Gustafson design model[29] is also comprises upon design, determination of problem and development. The determination of problem involves the problem identification and goal setting.[30] Objectives development and strategic specifications are included in the stage of design. In development stage material is developed. It is one of the good models of arising stimulation particularly the scenario of development.[31] This model adopts a holistic approach of instructional design which rivets on discoveries and analogical type of learning.

Instructional Design for Open Universities

The open universities are established on distance education system through more than one way of communication and delivery of their

instructional design. They frequently prepare their own instructional materials which are to be used for the courses, mostly adopting a distance education system that helps teacher to present the essential help to the presentation of additional activities. Multidimensional activities in the distance education institutions are designed through their own integrated instructional method and approach.[32] United Kingdom Open University is the largest distance institution of the world. It has number of learning fields and access opportunities for distance learners, having international standards of instructional design components. The components of UKOU include broadcast courses by the BBC, software, DVD, TV programs, audio and video material, on-line learning format and print material. Tutors and associate lecturers assist distance learners through innovative modules. They also evaluate all the activities and give feedback to Open University for reforms in the existing instructional design. The university also provides on-line conferencing services and consultation to learners for educational career and environment.[33]

USA is one of those very few countries that consider its educational institutions back bone of their prosperity. Top class experts give students up to date knowledge, they have access to modern technology and search engines for instance.[34] Apart of fulltime study, USA did not ignore distance-learning education in order to promote education, knowledge and skills. For example, Accra Institute of Technology which was established, among other objectives distance learning is also the part of university's mission. Instructions in AITs for open and online programs are given through printed learning resources and materials, platform and resources, internet, or web delivery system, campus and learning internet system, multimedia platform distribution of learning materials on CDs/DVDs/ Pen drives.[35] AIT offer number of resources to its students that include portal, libraries, online learning, portal, workshops, writing, research and media centre, campus email and computing.

Athabasca University of Canada makes use of extensive range of distance learning ways and depends upon a diversity of instructional technology to convey instructional and course material to its learners. It included printed materials, multi-media, online and web activities, Internet and email, computer software, audio/video conferencing and tapes, TV and radio.[36] Combination of delivery methods may be used for a particular course. If anyone registers himself for an online course needs access to a computer with internet facility.[37] Most of the courses at AU are offered as

individualized study and student in such course receives a learning resource pack by post or online and study independently with assistance and instructions from his tutor. The Open University of Malaysia is the largest Malaysian open and distance learning institution. It uses the mixed approach that joins written learning resources as the most important learning basis increased by online learning through a particularly developed Learning Management System and by face-to-face communications at various regional centers. Asynchronous forum board is one of the significant characteristic included into the LMS. The asynchronous forum board provision permits to empower a geographically discrete students and learners to take part in a mutual learning environment with peers and tutors.[38] The Centre for Instructional Design and Technology develops Open Distance Learning texts for University.[39]

Allama Iqbal Open University was established to provide educational opportunities for working people or those who do not carried out their formal education. It has a multi-media instructional design approach, the most important features of its instructional design are correspondence package which includes self-learning printed text and supplementary material, Radio and television transmitting in remote areas, tutorial instructional support and course assignments are part of the course wares.[40] E-learning and Centre for Instructional Design supporting, updating and modifying the instructional design of the university. The instructional design supported to enhance interaction among learners, experts and teachers. It use latest technology and tools for sharing information's and educational environment, projective activities, e-learning and e-assessment is the future vision of the university.[41]

Methodology

Descriptive survey is used to obtain information about research objectives i. e the current status of instructional design system, possibilities of innovations and gaps between existing practices and opportunities. Cross sectional research is involved; the tool questionnaire on five point Likert scale was developed and used for data collection. Questionnaires consist of number of statements for the measurement of subject variables. All statements of the questionnaires were closed ended, provided descriptions of five levels namely strongly agree, agree, uncertain, disagree and strongly disagree for quantitative judgment and respondents checked to one of the most appropriate. Validity and reliability of

the tool was made, pre-test is carried out to determine the effectiveness of initial construction of the tool. Questionnaires were presented to experts for professional validation; participants were asked for comments on the instrument concerning any unclear wording or vagueness. So content and face validity of constructs was made accommodating the comments of experts. Questionnaires were administered for pilot testing to respondent's part of the population to check the reliability of the instrument. Cronbach Alpha was used to determine the internal consistency of the tool through SPSS. The accepted cut-off value for reliability was equal or greater to 0.70.

Stratified random sampling procedure was adopted, 112 tutors and 516 distance students of 8 courses were selected for data collection. The researcher personally and through pre-paid postage administered and collected back the instruments to the sample population. To analyze the data, weight age to different options was given as, SA=5, A=4, UNC=3, DA=2 and for SDA=1. Data was grouped, coded & analyzed by using statistical techniques of Percentage, Mean Score, Variance, One way ANOVA Test, Post Hoc Test (LSD) and Homogeneous Test through Excel & SPSS. The mean score could range from 1 to 5, the score 3 and above was taken as favorable and scale value was assigned in the variance as: Extremely favour=0 – 0.5, strongly favour=0.6 – 1.0, moderately favour=1.1 – 1.5, average favour=1.6 – 2.0 and poor favour=2.1 & above.

Table 1: Mean Score and Variance of the Course Tutors N=91

	Statements	SA	A	UNC	DA	SDA	Mean	Vr
1	Course objectives	13	40	21	12	05	3.4	1.1
2	Appropriate study material	19	27	09	30	06	3.2	1.6
3	Innovative instructional design	21	29	14	10	17	3.3	2.0
4	Discussion in tutorial meetings	20	23	14	16	18	3.1	2.1
5	Technology strengthen	20	24	27	18	02	3.4	1.2
6	Generate ideas	17	24	11	28	11	3.1	1.8
7	Learners interaction	22	18	14	12	25	3.1	2.4
8	Evaluation system	15	23	13	19	21	2.9	2.6
9	E-assessment techniques	13	34	22	12	10	3.3	1.4

Table 1 present's description of statements, frequency of course tutors, mean score and variance analysis. Majority of the respondents agreed that course objectives are clearly measureable, the calculated mean score is 3.4 which favour the statement;

variance is 1.1 which moderately favours the statement. The respondents are agreed that appropriate study material is provided (Mean = 3.2 & Vr = 1.6). Instructional design should be more innovative (M= 3.3 & Vr=2.0), group discussion is encouraged in tutorial meeting and majority M=3.4 of the respondents agreed that modern educational technology is strengthening the instructional design. Students ideas are generated through instructional design (M=3.1 & Vr=1.8) and the use of modern educational technology increase learner's interaction. The evaluation system is suitable to evaluate all components of the instructional design the calculated mean score is 2.9 which do not favour the statement; variance is 2.6 which poorly favour the statement. E-assessment techniques should be used in the courses (M=3.3 & Vr=1.4).

Table 2: Mean Score and Variance of the Distance Students N=39

	Statements	SA	A	UNC	DA	SDA	Mean	Vr
1	Learning objectives	70	192	87	28	20	3.6	1.0
2	Instructional material	60	109	96	84	48	3.1	1.5
3	Intellectual clarity	30	61	117	145	44	2.7	1.1
4	E-learning support	98	182	101	09	07	3.9	0.7
5	Media integration	60	123	96	78	40	3.2	1.4
6	Material delivery	61	119	106	47	64	3.1	1.6
7	Transparent evaluation	70	80	141	82	24	3.2	1.3
8	Use of modern technology	141	121	64	46	25	3.7	1.5
9	E-assessment	97	147	87	35	31	3.6	1.3

Table 2 shows statements, frequency of distance students, mean score and analysis of variance. The respondents were agreed that learning objectives in courses are measureable (M=3.6 & Vr=1.0), instructional material is helpful (M=3.1, Vr=1.5) and the study material has intellectual clarity, the calculated mean score is 2.7 which do not favour the statement; variance is 1.1 which moderately favours the statement. Mean=3.9 and variance=0.7 shows that majority is agreed that e-learning support should be provided. Media support should be integrated with instructional events (M=3.2 & Vr=1.4), received study material in time and evaluation system is suitable to evaluate all components of the instructional design. E-assessment techniques should to be used in the courses, the calculated mean score is 3.6 which favour the statement; variance is 1.3 which moderately favours the statement.

Table 3: Analysis of Variance Significant at 0.05 level (ANOVA)

Variables	Source of Variation	Sum of Squares	Df	Mean	F	Sig.
Course Analysis	Between Groups	4.0	5	0.8	0.72	0.60
	Within Groups	651.8	580	1.1		
	Total	655.9	585			
Material Development	Between Groups	4500.7	5	900.1	671.8	0.00
	Within Groups	777.0	580	1.3		
	Total	5277.8	585			
Media Input	Between Groups	13.0	5	2.6	1.92	0.03
	Within Groups	786.6	580	1.3		
	Total	799.6	585			

Table 3 presents dependent variables i. e. course analysis, material development and media input. Computed results of sum of square, df, mean square, F-statistics and their significance are shown. Results suggest that material development and media input of the population (0.00 & 0.03) are significant at 5% level of significance. This means that there should be more training opportunities; material resources and strategies for material development. Media input may be provided for learner's access through broadcast and non-broadcast support for enhancement of instructional design.

Table 4: Multiple Comparisons (Post Hoc, 95% confident interval)

Variable	Catg: (I)	Catg: (J)	Mean Diffr:	Std: Errors	Sig:	Lower limit	Upper limit
Course Analysis	Tutors	Students	.058	.124	.63	-.185	.302
Material development	Tutors	Students	.488	.135	.00	.222	.755
Media input	Tutors	Students	-.015	.136	.91	-.283	.252
Delivery system	Tutors	Students	.033	.140	.81	-.243	.309
Evaluation	Tutors	Students	-.100	.138	.47	-.373	.172

Table 4 shows the results of Post Hoc test for multiple comparisons of variables course analysis, material development, media input, delivery system and evaluation techniques. Course tutors results are compared with distance students, cross analysis is carried out through LSD (least significant difference) with each variable. The results suggest that course tutors are significant with distance students (0.00) in material development. Results also presents that course tutors and distance students are not significant

with respect to variables course analysis, delivery system and evaluation techniques.

Table 5: Homogeneous Results Subset for Alpha= 0.05 (Duncan Test)

Variable	Category	N	I	II
1. Course analysis	Distance learners	397	3.5	
	Course tutors	91	3.5	
	Sig:		0.3	
2. Material development	Distance learners	397	2.8	
	Course tutors	91		3.3
	Sig.		1.0	0.2

Table 5 indicates homogenous results of course analysis and material development, group mean is displayed in homogenous subsets for alpha at 5% level of significance. Results of course analysis shows that distance students and course tutors homogeneity in their group means such as 3.5 and 3.5. In the results of material development of distance students and course tutors with their respective sample sizes showing homogeneity in their group means such as 2.8 and 3.3. Population's means for groups are homogeneous in two subsets, first subset includes distance students with their group means 2.8 and second subset includes mean 3.3 significant homogeneity.

Table 6: Homogeneous Results Subset for Alpha = 0.05 (Duncan Test)

Variable	Category	N	I	II
1. Media input	Distance learners	397	3.3	
	Course tutors	91	3.3	
	Sig:		.92	1.0
2. Delivery system	Distance learners	397	3.1	
	Course tutors	91	3.1	
	Sig:		.13	
3. Evaluation techniques			3.1	
			3.2	
	Sig:		.57	

Table 6 presents results of media input, delivery system and evaluation technique of course tutors and distance students with their respective sample sizes. In media input results show significant homogeneity in their group means such as 3.3 and 3.3

in two subsets. In delivery system, distance students and course tutors showing homogeneity in their group means such as 3.1and 3.1. Results of group means for homogenous subset are displayed which suggest that all populations are 13% significantly homogenous for delivery system, also showing one subset of alpha at 5% level of significance. In evaluation technique, suggests that course tutors and distance students with their respective sample sizes showing homogeneity in their group means such as 3.1 and 3.2 respectively.

Conclusions

The study concluded that course objectives are determined and course contents are developed considering the learners profile in instructional design. Distance learning activities are designed in logical order and innovations are projected in instructional design. There should be e-learning, e-assessment format and mechanism of collaboration of activities in instructional design. Multimedia i.e. broadcast and non-broadcast support is needed for enhancement of instructional design. Communication and delivery strategies to be promoted for learner interaction. On-job training opportunities and resources are available for all stakeholders of instructional design but more enhancements of resources is needed. Use of modern educational technology, students supports services and evaluation system to be promoted of instructional design.

Recommendations

Instructional design has multi dimensional aspects, innovative and blended strategies to be introduced like up-date print material, e-class rooms, video lectures, micro teaching, media channels, on-line libraries, out-door learning projects, open education resources, connected instructional design model, massive on-line open courses, sports events and global learning environment. E-assessment format having subjective and objective items may be enhanced, emerging learning technology and learner's access to be enriched. Learner's comprehension and exploration opportunities may be created, relevancy and balance activities may be encouraged in courses. Learning facilities as suitable venue and infrastructure may be provided for effective learning, future concerns may be considered in instructional design. Research activities may be enhanced for future vision, areas of need, reach the unreached and distance learners centered activities to be promoted, comparative studies of instructional design in national and international perspectives may be carried out. Management

services, quality assurance, mechanism of collaboration and cost effectiveness may be improved for instructional design.

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