

A Critical Analysis of Periodical Literature in Distance Education

SANJAYA MISHRA

Indira Gandhi National Open University, New Delhi, India

Abstract: *The paper elaborates on the importance of periodical literature as a primary source of information for research. It presents an overview of the origin of periodicals and reasons for their proliferation having implications on research activities in all disciplines. It analyses the periodical literature on Distance Education (DE) to reveal the state and status of the subject and research activities on it. Covering four refereed journals of Distance Education, viz. Open Learning, American Journal of Distance Education, Indian Journal of Open Learning, and Distance Education, in the study, it concludes that researchers in DE mostly use survey method; citation behaviour is a common practice; there is a trend towards collaborative research; 80 per cent of papers originate from five countries; and research on learner centred issues dominate the areas of contribution.*

Introduction

Periodical literature being the primary source of information is the life blood of research. Periodicals disseminate new ideas and help the literature of a subject field grow by reporting latest developments. A periodical is very often termed as journal, periodical publication, serial, etc. having almost the same connotation. International Organisation for Standardisation (ISO) considers it as a 'serial publication' dealing generally with one or more specialised fields intended to supply general information or scientific or technical information (ISO, 1983). Whereas, serial is "a publication, in printed form or not, issued in successive parts usually having numerical or chronological designations and intended to be continued indefinitely. Serials include periodicals, newspapers, annuals (reports, yearbooks, directories, etc.), the journals, memoirs, proceedings, transactions, etc. of societies, and monographic series" (ISO, 1986). Periodicals are basically of Two types, viz. (i) Primary periodicals - that are "mainly intended to be the major vehicles for publication of papers on the theory and practice of a discipline and are supposed to report the results of significant research findings in the particular field" (Anand, 1990:1); and (ii) Secondary periodicals - that normally report about publications in primary periodicals, e.g., indexing periodicals and abstracting periodicals. The function of primary periodicals are to:

- make public the results of original research to the widest possible audience; provide a permanent record or archive of researches which have been carried out;
- enable an independent scientist or technologist or researcher to establish the fact that he/she was the first person to make a particular discovery, the process being

formally known as the assignment of priority; and

- ensure a guaranteed standard of quality in the papers accepted for publication, this being achieved through the refereeing system (Royal Society, 1981).

Because of the honour associated with publication in standard periodicals, the process of 'peer review' or refereeing system has got an enviable position in the publication process. In fact the quality of a periodical is judged by its strong refereeing system. Though the system has its own 'demerits', it ensures a minimum level of standard. The role of referee has been described by Forscher (1980) as the provision of answer to the following questions:

- Does the main section of the paper provide new facts, observations or ideas?
- Has the published literature been treated fairly?
- Can the data reported be obtained with the methods used ?
- Can the observation be accounted for by one or more interpretations in addition to those provided by the author?
- Do the observations support the conclusion presented absolutely, strongly, reasonably or inadequately?

The origin of periodicals and 'peer review' process are in fact the result of a "proprietary attitude to research findings" (Cronin, 1984:14) witnessed in the sixteenth and seventeenth century. "The earliest periodicals (using the term in its modern sense) appeared in the mid-seventeenth century. They were *Journal de Scavans*, founded in Paris in December 1664 or January 1665 and *Acta philosophia* known more familiarly as the *Philosophical transactions* and first issued on March 6, 1665" (Davinson, 1969:1). Since then the number of periodicals have grown exponentially and the 33rd edition of *Ulrich's International Periodical Directory, 1994-95* has reported 1,47,000 periodicals published all over the world. Subramanyam (1975) has attributed this overwhelming proliferation to the following:

- large increase in the amount of research and development, carried out since the World War II;
- consequent increase in the number of scientists and technologists who are actively carrying out research;
- value placed on a scientists publication by employers and colleagues as a means of assessment, thus resulting in the 'publish or perish syndrome' requiring a scientist to produce large number of papers, in order to achieve status and promotion;
- increasing specialisation of science, resulting in the foundation of new specialised titles; and
- development of high-speed, low cost printing technology.

Garfield (1977) however has attributed the proliferation of new journals to five major issues, viz.:(1) undue delay in publication by established journals; (2) selection policies which force the 'out' group to establish initially 'minor' journals which quickly grow into major journals; (3) growth of new specialities which are not easily accommodated in the existing scope of established journals; (4) nationalistic or other political

reasons which have little bearing on scientific merit, (5) the growth of science in general” (p.126). Proliferation in quantity also leads to specialisation by ‘amalgamation’ and ‘splitting’ of periodicals (Ranganathan, 1964 : 434). The specialised periodicals report research activities and therefore play a significant role in dissemination of knowledge in a particular discipline. Thus for a discipline to be recognised as mature, research in its core domain of knowledge is highly necessary. Research literature of a discipline “contain the record of the culture of the discipline. They contain the specialised knowledge and examples of research procedures that are the unique responsibility of the system. It is by means of them that a discipline maintains its heritage” (Robbins, 1973). According to Keegan (1990) distance education is “a distinct field of educational research and training within the discipline of education. It is considered to have links to other fields within the discipline of education, notably educational technology, adult education, and the study of non-traditional/open system” (p.7). On the other hand Holmberg (1996) while discussing the character and scope of distance education in the 1990s, confirms his earlier (1986) view of distance education as a discipline in its own right” (p.20) based on the growth of research activities and university teaching of the subject.

“The foundation of a number of academic journals, and the development of research in sub- fields like course design, economics of distance education, student support services, and media in distance education” (Keegan, 1990 : 9) in the 1980s have resulted in an exponential growth of literature on distance education. By 1994 there were 16 periodicals and 20 newsletters catering to the need of the specialists in this discipline (Harry, 1994). Research in distance education is concerned with two important activities, viz. “(i) to undertake and report research activities in distance education and (ii) to review such activities to examine the direction in which distance education is progressing” (Panda, 1992 : 310). In recent years there has been an increasing importance of methodology and approach to research on distance education (Coldeway, 1988). Whatever may be the approach, research should culminate in and lead towards development of a cohesive theory of distance education. Keegan notes:

“A theory is something that eventually can be reduced to a phrase, a sentence or a paragraph and which, while subsuming all the practical research, gives the foundation on which structures of need, purpose and administration can be erected. A firmly based theory of distance education will be one which can provide the touchstone against which decision - political, financial, educational, and social - can be taken with confidence. Such a theoretical basis would replace the *ad-hoc* way of responding to ‘critics’ situations which normally characterize this field of education” (1990:5).

According to Moore:

“Theory is simply an organisational statement of what is known, a map of the field, which has two practical uses. First, it sets out in the minimum space and in the simplest way the result of research, therefore giving practitioners a guide for practice without their having to analyse all the data for themselves. Second, as far as researchers are concerned, they help to clarify the blank spaces on the map, so it both suggests what needs investigation and summarises what has been discovered” (1985:51).

The present study intends to serve the second purpose, by critically analysing the published periodical literature of distance education with a premise that study of items published in periodicals will reveal the state and status of the subject field to which they belong or the state and status of the periodicals, and the background of the state of research activities in the subject fields (Baburajan, 1988).

Objectives

The objectives were to find the:

- i) nature of contributions published in distance education periodicals and research methods used;
- ii) average number of references per contribution and contributions without references;
- iii) authorship pattern in distance education and the most frequent contributors;
- iv) origin of contributions with reference to country and institution type; and
- v) distribution of research contributions in various sub-groups of distance education.

Methodology

Sources of Data

As the study aimed at critically analysing the periodical literature of distance education, it was decided to include only referred journals for the study, because of their quality and standard. There are more than 16 periodicals on distance education, of which only six are refereed journals (Harry, 1994). However, out of the six, one journal - *Istruzione a Distanza* is published in Italian language, and another - *Journal of Distance Education* is a bilingual publication having articles in English and French. Therefore, for this study both these journals were excluded. Thus, the data for this study came from four refereed journals, namely: *Distance Education* (DE), *Open Learning* (OL), *American Journal of Distance Education* (AJDE), and *Indian Journal of Open Learning* (IJOL).

Data Collection

In view of the fact that these periodicals started in different years and differ considerably in number of volumes, a five year time period was taken to maintain uniformity. Therefore, it was decided to maintain 1996 as the base year and go backward for five volumes of each periodical. However, due to non-availability of the complete set of two periodicals for 1996, it was decided to take 1995 as the base year, especially for these two periodicals. Thus data collection was done from the following sources, as described in Table 1.

Table 1: Data sources

<i>Journal</i>	<i>Years</i>	<i>Volumes</i>	<i>No. of Issues</i>
Distance Education	1991-95	12-16	10
Open Learning	1992-96	7-11	15
American Journal of Distance Education	1991-95	5-9	15
Indian Journal of Open Learning	1992-96	1-5	9*

* Vol. 4, No.2 is a special issue consisting of a report of the World Bank study on cost-effectiveness of open universities conducted by V.C. Kulandaiswamy. Therefore, it has not been included in the study.

To collect data from each of the articles from the sources in Table 1, a short data collection sheet was designed having space for information like : name of the author(s), number of author(s), title, name of periodical, volume, issue, pages, references, origin of the article -country, institutional affiliation, research methodology used, instruments used, subject headings, etc. Except for identification of research methods used and categorisation of subject, rest of the information was factual and needed only recording on the data collection sheet. However, information regarding research methods used and subject categorisation required higher order analysis and critical understanding of issues related to knowledge representation, organisation and systematic scientific inquiry. For subject categorisation, articles were assigned relevant keywords or phrases to denote the subject area based on their 'focus' and 'context'. After the data collection was over, by analysing all the keywords, a 'knowledge map' for the field of distance education was developed with inputs from the literature survey. As such the list used for analysis is depicted in Appendix-I . However, for the research methods, based on the relevant literature, a simple list of research methods was developed (Appendix-II). Data thus collected were manually processed for analysis and interpretations.

Results and Discussion

As indicated earlier, data for the study was gathered from 49 issues of the source journals. A break up of the number of articles in these journals is given in Table 2. In the case of *Open Learning*, articles from section two were included for analysis, but conference reports and debates were excluded. Similarly in case of *Distance Education* no distinction was made between 'main article' and 'reports and surveys' .

Table 2: Average number of articles

<i>Journals</i>	<i>Number of Issues</i>	<i>Total Number of Articles</i>	<i>Average Articles/Issue</i>
AJDE	15	80	5.3
DE	10	93	9.3
OL	15	120	8.0
IJOL	09	68*	7.5

* Excludes one annotated bibliography and one abridged research report

Research Methods

Table 3 indicates the research methods used by distance education researchers. Most of the articles are descriptive in nature and are discussion oriented (47.64%). Survey method forms the next favourable method (21.32%). Interestingly the use of experimental research method, evaluation and qualitative methodology are relatively less and this shows that the subject has to go a long way in inculcating methodological rigour into research activities.

Data Collection Techniques

The articles that used survey and qualitative methods were further analysed to identify the data collection techniques used. Use of questionnaire and psychometric scales are

common in distance education research (89.01%). Interestingly there has been a trend towards rigour in these articles and few papers also used more than one technique for data collection (Table 4).

Table 3: Research methods

<i>Methods</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>Total</i>	<i>%age</i>
Descriptive/Discussion	34	29	71	38	172	47.64
Content analysis/ Conceptual analysis/critical analysis	11	18	23	06	58	16.06
System analysis, design and modelling	01	—	02	—	03	00.83
Literature review	03	05	02	02	12	03.32
Historical method	—	03	01	—	04	01.10
Survey method	23	21	17	16	17	21.32
Experimental method	03	05	—	02	10	02.77
Evaluation method	03	04	01	03	11	03.04
Qualitative method (includes case study)	02	08	03	01	14	03.87

Table 4: Data collection techniques* (N = 91)

<i>Techniques</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>Total</i>
Questionnaire (includes scales)	24	26	15	16	81
Observation	03	03	—	—	06
Interview (Both face to face & telephone)	07	10	08	01	26

*Multiple techniques used in some papers.

Study of References

Bibliographic citations [references] are symbols for “a concept, functions as a metaphor for the cognitive content of a specific publication. That is, the relationship between the cited document and the concept it symbolizes is metaphoric” (McInnis, 1982:56). References are also indicators of the scholarliness of a journal (Cline, 1982: 210).

Reference Characteristics

Table 5 reveals the reference characteristics of the periodical sample. Articles without reference range from 6.25 percent in AJDE to 14.7 per cent in IJOL. There is almost a similar trend in all the periodicals with regard to references, except for a variation in IJOL. In total 90.85 percent of the papers had references, showing that researchers in the field of distance education have taken note of Moore’s 1985 observation on lack of references to previous research.

Table 5: Reference characteristics

<i>Paper Characteristics</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>Total</i>
With reference	75 (93.75)	87 (93.54)	108 (90.0)	58 (85.29)	328 (90.85)
Without reference	05(06.25)	06(06.45)	12(10.00)	10(14.70)	33(09.14)

Figures within bracket represent percentage.

Average Reference per Paper

The average reference per article in the periodical sample is 17.23 (Table-6). Though there is considerable difference amongst the four periodicals in the mean score, all but one periodical support the average (16 ± 6) per paper estimated by Price (1970) and Avramescu (1980) for scholarly journals in terms of their information content and quality. According to Price (1970), the papers with less than 10 references imply "the culminating scholarship does not exist but is irrelevant or exists relevantly but is unknown". In case of IJOL as the mean score is almost near 10 neither of these three conditions perhaps apply to it and we can interpret it as a growing tendency towards established "scholarliness".

Table 6: Average reference

No. of References	AJDE	DE	OL	IJOL	Total
01-05	13	09	28	23	73
06-10	10	11	23	17	61
11-15	13	08	13	08	42
16-20	13	13	08	06	40
21-25	07	15	11	01	34
26-30	11	09	07	02	29
31-35	03	08	02	—	13
36-40	01	04	03	—	08
41-45	01	—	05	01*	07
46-50	01	03	02	—	06
51-55	01	02	03	—	06
56-60	01**	02	01	—	04
61-65	—	01	—	—	01
66-70	—	—	01	—	01
71-75	—	—	—	—	—
76-80	—	01	—	—	01
81-85	—	—	—	—	—
86-90	—	—	—	—	—
91-95	—	—	01***	—	01
96-100	—	01****	—	—	01
Mean Score	17.73	23.8	17.58	9.27	17.23

*43 references; ** 60 references *** 92references, ****99 references

Authorship Pattern

The authorship pattern in the field of distance education is depicted in Table 7. This shows that single author papers constitute 61.49 percent of the total, leaving only 38.5 percent to multiple author contributions. Though Price (1963) predicted that by 1980 there would be no single authored paper it has not happened so irrespective of the fact that there is a growing tendency of collaboration in science and technology (Mishra and Mishra, 1991). Distance Education being a social science, perhaps the researchers prefer to work individually. But as the subject grows and applies technology in practice, collaborative research will increase. This is also imperative from authorship pattern in AJDE which has 53.75 percent multiple author contributions.

Table 7: Authorship pattern

<i>Journal</i>	<i>Number of author(s)</i>						<i>Total (2 to5)</i>
	1	2	3	4	5		
AJDE	37 (46.25)	30	06	06	01	43 (53.75)	
DE	52 (55.91)	24	11	05	01	41 (44.08)	
OL	86 (71.66)	25	07	02	—	34 (28.33)	
IJOL	47 (69.11)	13	08	—	—	21 (30.88)	
Total	222 (61.49)					139 (38.50)	

Figures in bracket indicate percentage

Leading Contributors

For the 361 papers in this study, there were 564 contributors in total. To list the leading contributors in the period under study, those authors who contributed atleast three or more papers were identified. Table 8 shows 21 authors from U.K., U.S.A., Australia, Canada, Netherlands, Hong Kong and India. Rumble's series on Labour market theory published in *Open Learning* was counted as three papers.

Table 8: Leading contributors

<i>Name (country)</i>	<i>Number of papers</i>
Greville Rumble (U.K.)	5
Alan Tait (U.K.)	4
Olugbemiro Jegede (Australia)	4
Richards Edwards (U.K.)	4
Som Naidu (Australia)	3
B.N. Koul (India)	3
Bruce Scriven (Australia)	3
Cherlotte N. Gunawardena (U.S.A.)	3
Connie L. Dillon (U.S.A.)	3
D. Randy Garrison (Canada)	3
David Kember (Hong Kong)	3
Donald Olcott, Jr. (U.S.A)	3
H.C. S. Rathore (India)	3
H. Lauren Pugh (U.S.A.)	3
Henry Simpson (U.S.A.)	3
K. Murugan (India)	3
L.J.J.M. Wegeman (Netherlands)	3
Pat Rickwood (U.K.)	3
Paul M. Biner (U.S.A.)	3
Stephen W. Parchman (U.S.A.)	3
Terry Evan (Australia)	3

Country-wise Distribution of Papers

For the analysis of country-wise distribution the first author's country was taken into consideration. Table 9 depicts that more than eighty percent (81.16) papers come from only five countries (15.15%), though distance education research is carried out all over the world. Another interesting fact is that journals tend to publish more from their country of origin. It supports an earlier study by Calvert (1995).

Table 9: Country-wise distribution of papers

<i>Countries</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>Total</i>	<i>%age</i>	<i>Cumulative</i>
U.K.	04	06	65	01	76	21.05	21.05
U.S.A.	51	11	05	04	71	19.66	40.72
Australisa	01	49	10	01	61	16.89	57.61
India	—	01	—	60	61	16.89	74.51
Canada	14	05	05	—	23	06.64	81.16
Hong Kong	01	04	05	—	10	02.77	83.93
Germany	01	03	03	—	07	01.93	85.87
Netherlands	01	05	—	—	06	01.66	87.53
New Zealands	—	03	02	—	05	01.38	88.91
Belgium	—	01	02	—	03	00.83	89.75
China	02	—	01	—	03	00.83	90.58
Ireland	—	—	03	—	3	00.83	91.42
PNG	—	01	02	—	03	00.83	92.24
South Africa	—	01	02	—	03	00.83	93.07
France	—	—	02	—	02	00.55	93.62
Honolulu	02	—	—	—	02	00.55	94.18
Hungary	—	—	02	—	02	00.55	94.73
Norway	—	—	02	—	02	00.55	95.29
Sudan	—	01	01	—	02	00.55	95.84
Sweden	—	—	02	—	02	00.55	96.39
Israel	—	—	02	—	02	00.55	96.94
Austria	—	—	01	—	01	00.27	97.21
Costa Rica	01	—	—	—	01	00.27	97.48
Ethiopia	—	01	—	—	01	00.27	97.75
Fiji	—	01	—	—	01	00.27	98.02
Finland	01	—	—	—	01	00.27	98.29
Greece	—	—	01	—	01	00.27	98.56
Japan	—	—	—	01	01	00.27	98.83
Nigeria	—	—	—	01	01	00.27	99.10
Spain	01	—	—	—	01	00.27	99.37
Turkey	—	01	—	—	01	00.27	99.64
Venezuela	—	—	01	—	01	00.27	100.00
32 Countries	80	93	120	68	361		

Institution-wise Distribution

The analysis in Table 10 depicts that majority of papers come from higher academic institutions (88.91 %). Whereas, contributions from Government departments and industry includes 3.32 percent and 1.93 percent respectively. Others in the table consist of unclassified contributions and few contributions from schools.

Table 10: Institution-wise distribution of papers

<i>Institutions</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>Total</i>
Univesity & Colleges	67 (83.75)	84 (90.32)	108 (90.00)	62 (91.17)	321 (88.91)
Industry	3(3.75)	1(1.07)	3(2.50)	—	7(1.93)
Government Departments	3 (3.75)	4 (4.30)	5 (4.16)	—	12 (3.32)
Other	7(8.75)	4(4.30)	4(3.33)	6(8.82)	21(5.81)

Figure in bracket indicate percentages

Topic-wise Distribution of Papers

Table 11 depicts the distribution of papers in 34 sub-groups with item No. 3 (Distance Education: Growth and Development) having the highest number of contributions (12.74%). Interestingly all these 34 sub groups in Table 11 fall in seven major groups, as depicted in Table 12.

Learner issues constitute 21.88 percent of the papers, followed by distance education in perspectives (18.0%). Description of distance education in practice (15.78%) reveal that distance education methodology is being employed in varieties of programmes and institutions. The 1st rank of learner issues is rightly justified as all the institutions and researchers in distance education are more concerned about learners, true to the philosophy of learner centredness in distance education. It is satisfying to see that periodical literature in distance education during the period under study has covered all areas of research priority (Coldeway, 1988; Marland, 1989; Taylor, 1989; Panda, 1992; Rekkedal, 1993; Jegede, 1994). However, research needs to focus more on technology, management, learning materials and student support, rather than general descriptions of distance education and its application. Methodological rigour has also bearing on this aspect. As we have seen in Table 12, 47.64 percent of papers have descriptive and discussion orientation, which may have led to more of general articles on distance education and programme descriptions.

Conclusions

The major finding of this study could be summarised as follows :

- Distance education researchers mostly use survey method (21.32%) in their investigation. However about half of the articles covered in the study were descriptive in nature and methodological rigour is relatively poor, as use of qualitative methods and experimental research are less. Normally distance education researchers use questionnaires and psychometric scales.
- Researchers in Distance Education normally use previous research on the topic and citation behaviour is common, as 90.85 percent of the papers under study had references. Also the average reference per article is 17.23, which indicates an established scientific practice of referencing .
- Single author contributions in Distance Education are more common (61.49%). However in AJDE multiple author papers constitute 53.75 percent indicating a trend in collaborative research.

Table 11: Topic-wise distribution

<i>S. No.</i>	<i>Subject Headings</i>	<i>AJDE</i>	<i>DE</i>	<i>OL</i>	<i>IJOL</i>	<i>total</i>	<i>%age</i>
1.	Distance Education in general	02	01	—	—	03	00.83
2.	Distance Education and Open Learning	—	01	—	—	01	00.27
3.	Distance Education Growth & Development	09	11	23	03	46	12.74
4.	Distance Education in National Development	—	01	03	01	05	01.38
5.	Equity and Access	01	03	03	03	10	02.77
6.	Learner Characteristics (including dropouts)	03	07	05	05	20	05.54
7.	Student Learning, Workload, Study skills (including independent learning)	03	07	03	02	15	04.15
8.	Cognition and Metaognition	—	04	—	—	04	01.10
9.	Student Support Services	04	03	18	09	34	09.41
10.	Interaction and Feedback (Assignments)	01	01	02	02	06	01.66
11.	Study Materials: Design & Development	02	07	04	04	17	04.70
12.	English for Distance Education Purposes	—	—	—	03	03	00.83
13.	Learning from Media	—	—	01	—	01	00.27
14.	Tele-teaching and Learning	10	01	02	—	13	03.10
15.	Instructional and Communication Technology	03	04	04	03	14	03.87
16.	– Computer Mediated Communication	06	02	01	—	09	02.49
17.	– Interactive Multimedia	01	03	01	—	05	01.38
18.	– Television and Interactive TV (Teleconferencing)	06	—	01	04	11	03.04
19.	– Video conference (2 way)	—	04	—	—	04	01.10
20.	– Audio Conferencing	04	—	01	—	05	01.30
21.	– Audio Graphics	01	—	—	—	01	00.27
22.	– Telephone	—	01	—	—	01	00.27
23.	– Audio and Video Tapes	—	01	—	—	01	00.27
24.	Management and Planning	03	—	04	02	09	02.49
25.	Economics of Distance Education	—	—	01	—	01	00.27
26.	Evaluation and Quality Assurance	04	06	08	05	23	06.37
27.	Distance Education: Theory & Philosophy	05	09	09	01	24	06.64
28.	Distance Education Research	02	02	02	—	06	01.66
29.	Professional Development of Distance Educators	03	01	03	05	12	03.32
30.	Discipline based context	03	03	04	05	15	04.15
31.	– Industrial and Business Context	—	02	03	—	05	01.38
32.	– Teacher Education	—	01	03	03	07	01.93
33.	Programme Description	04	07	08	06	25	06.92
34.	Distance Education Institutions	—	—	03	02	05	01.38

Table 12: Major groups and their rank

<i>Items in Table 11</i>	<i>Groups</i>	<i>No. of Papers</i>	<i>Percentage</i>	<i>Rank</i>
01-05	Distance Education in Perspective	65	18.00	II
06-10	Students and their Learning	79	21.88	I
11-14	Learning Materials and related Issues	34	09.41	VI
15-23	Technology Issues	51	14.12	IV
24-26	Management Issues	33	09.14	VII
27-29	Distance Education: Theory, Research and Training	42	11.63	V
30-34	Distance Education in Practice	57	15.78	III

- More than 80 per cent of papers were contributed by authors from five countries, viz. U.K., U.S.A., Australia, India and Canada, though Distance Education research is carried out in around 32 countries. Interestingly the journals under study publish more from their country of origin. Contributions from University and colleges constitute the major bulk of publications (88.91%).
- Though learner centred issues constitute 21.88 percent of the contributions and all priority research areas have been covered by researchers, it is imperative that research needs to focus more on technology, management, learning materials and student support, as their proportion is less in comparison to general discussion on distance education and its application.

References

- Anand, J.K. (1990) Journal of Library and Information Science, 1976-89: An Analytical Study, *J of Lib Inf Sc.*, 15(2): 1-28
- Avramescu, A (1980) Coherent information energy and entropy, *Journal of Documentation*, 36(4): 293-312.
- Baburajan, A (1988) IEEE Transactions on computers: A bibliometric analysis, *IASLIC Bulletin*, 33 (2-3): 53-59.
- Calvert, J (1995) 'Mapping knowledge in distance education' in Sewart, David (Ed) *One World Many Voices : Quality in Open and Distance Learning*, Birmingham: ICDE, pp. 384-8.
- Cline, Gloria S. (1982) College and Research Libraries: Its first forty years. *College and Research Libraries*, 43(3):208-32
- Coldeway, Dan O. (1988) Methodological issues in distance educational research. *Amercian Journal of Distance Education*, 2(3): 45-54.
- Cronin, Blaise (1984) *The citation process: the role and significance of citations in scientific communication*. London: Taylor Graham. p. 103.
- Davinson, D.E. (1969) *The periodical collection: its purpose and uses in libraries*. London: London House & Maxwell. 212 p.
- Forscher, B. K. (1980) The role of the referee. *Scholarly Publishing*, 11 (2): 165-9.
- Garfield, E (1977) 'Is publication in "Minor" journals tantamount to burial?' In Garfield,E.(Ed). *Essays of an information scientist*. Vol. 1. Philadelphia: ISI. p. 126-127.
- Harry, Keith (1994) A rough guide to distance education journals and newsletters. *Open Praxis*, 1:6-9.
- Holmberg, Borje (1986) A discipline of distance education, *Journal of Distance Education*, 1(1): 25-40.
- Holmberg, Borje (1996) The discipline of distance education - Character and scope in the 1990s, *Epistolodidaktika*, (1): 5-36.
- ISO 3297-1986: *Documentation - International Standard Serial Numbering (ISSN)*, Geneva: International Organisation for Standards.
- ISO 5127/2-1983 (E/F): *Documentation and Information - Vocabulary - Part 2: Traditional documents*, Geneva: International Organisation for Standardisation.
- Jegade, Olugbemiro (1994) Distance Education research priorities for Australia: A study of the opinions of distance educators and practitioners. *Distance Education*, 15(2): 234-253.
- Keegan, Desmond (1990) *Foundations of distance education*, 2nd Ed. London: Routledge. 214p.
- Marland, Perc (1989) An approach to research on distance learning, *British Journal of Educational Technology*, 20(3): 173-182.
- McInnis, R (1982) 'Do metaphors make good sense in teaching research strategy?' In Oberman, C. and Strach, K. (Eds). *Theories of bibliographic education: designs for teaching*. New York: Bowker. p.47-74.

- Mishra, Sanjaya and Mishra, Manoj K (1991) Collaborative research in Medicinal and Aromatic plants, *Library Herald*, 30(1):30-34.
- Moore, Michael G. (1985) Some observations on current research in distance education, *Epistolodidaktika*, 1: 35-62
- Panda, Santosh (1992), Distance educational research in India: Stock-taking, concerns and prospects, *Distance Education*, 13(2): 309-326.
- Price, D.J. de Solla (1963) *Little science, big science*, New York: Columbia University Press. p.87-91.
- Price, D.J. de Solla (1970) 'Citation measure of hard science, soft science, technology and non-science', In Nelson, C.E. and Pollack, D. (Eds) *Communication among Scientists and Engineers*. Lexington: Lexington Books. p.3-22.
- Ranganathan, S.R. (1964) *Classified Catalogue Code: with additional rules for dictionary catalogue*. Bangalore: SRE for Lib.Sc. 644 p.
- Rekkedal, Torstein (1993) Recent research on distance education, *Open Learning*, 8(1): 32-37.
- Robbins, Jan C (1973) Social function of scientific communications, *IEEE Transactions on Professional Communication*, PC-16:132.
- Royal Society (1981) *A Study of the scientific information system in the United Kingdom*. London: Royal Society.
- Subramanyam, K (1975) The scientific journal: a review of current trends and future prospects, *Unesco Bulletin for Libraries*, 29(4):192-201.
- Taylor, J.C. (1989) Distance education in South Asia : Problems and prospects. *Paper prepared for the Asian Development Bank's round table conference on distance education for South Asian Countries*, Islamabad.
- Ulrich's International Periodical Directory 1994-95. 5V (1994)*. New Jersey: R.R.Bowker.

APPENDIX I

SUBJECT CATEGORIES IN DISTANCE EDUCATION

1. DISTANCE EDUCATION - General
2. DISTANCE EDUCATION and OPEN LEARNING
3. DISTANCE EDUCATION - Growth and Development
4. DISTANCE EDUCATION in National Development
5. EQUITY and ACCESS
6. LEARNER CHARACTERISTICS (including Dropouts)
7. STUDENT LEARNING, WORK LOAD, STUDY SKILLS (includes independent learning)
8. COGNITION and METACOGNITION
9. STUDENT SUPPORT SERVICES
10. INTERACTION and FEEDBACK (Assignments)
11. LEARNING MATERIALS - Design and Development
12. ENGLISH for DISTANCE EDUCATION
13. LEARNING FROM MEDIA
14. TELETEACHING and LEARNING
15. INSTRUCTIONAL and COMMUNICATION TECHNOLOGY - General
- 15.1 COMPUTER MEDIATED COMMUNICATION
- 15.2 INTERACTIVE MULTIMEDIA
- 15.3 TELEVISION and INTERACTIVE TELEVISION (Teleconferencing)
- 15.4 VIDEO CONFERENCING (2 way)
- 15.5 AUDIO CONFERENCING
- 15.6 AUDIO GRAPHICS
- 15.7 TELEPHONE
- 15.8 AUDIO-VIDEO TAPES
16. MANAGEMENT and PLANNING
17. EVALUATION and QUALITY ASSURANCE
19. DISTANCE EDUCATION - Theory and Philosophy
20. DISTANCE EDUCATION RESEARCH
21. PROFESSIONAL DEVELOPMENT OF DISTANCE EDUCATORS
22. DISCIPLINE BASED CONTEXTS
- 22.1 INDUSTRIAL and BUSINESS TRAINING
- 22.2 TEACHER EDUCATION
23. PROGRAMME DESCRIPTIONS
24. DISTANCE EDUCATION INSTITUTIONS

APPENDIX II

RESEARCH METHODS

DESCRIPTIVE /DISCUSSION: Articles mainly having descriptions of institutions, programmes , concepts without specific methods per se.

CONTENT ANALYSIS/CRITICAL ANALYSIS: Articles having used specifically the content analysis, critical analysis and discourse analysis techniques dealing with meaning and interpretations of concepts, process, phenomena, etc.

SYSTEM ANALYSIS: Articles based on the systems approach and having used the mathematical models and system design procedures.

LITERATURE REVIEW: Stock taking of the areas covered alongwith analysis and interpretations.

HISTORICAL METHOD: Includes collection, verification and analysis of historical facts and records.

SURVEY METHOD: Research based upon data gathered directly through questionnaires, interviews,etc.

EXPERIMENTAL METHOD: Research in which investigator(s) specify exactly, or control the conditions of the variables.

EVALUATION METHOD: Normally a survey kind of research Method with emphasis on measuring or evaluating usefulness or effectiveness.

QUALITATIVE METHOD: Includes articles which specify 'Qualitative method' as such in their methodology part and others that employ more than one methods and techniques to gather and analyse data. Includes case study.

[**Mr. Sanjaya Mishra** is Lecturer in Distance Education. *Correspondence:* Staff Training and Research Institute of Distance Education, Indira Gandhi National Open University, New Delhi 110068, India. Fax: 91-11-6857073. E-mail: stride@del2.vsnl.net.in]