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Policy Shifts in School Education

This study explores the two decades of publication of research articles related to Teacher Education through Open Distance Learning in research journals of distance education and find out the type of delivery modes used, frequency of delivery modes and the communication approaches it follows for the delivery of instructional activities. It further examines the research method, sampling techniques, tools for data collection used in the articles and also the authorship pattern of the articles. The study presented here is a basis towards understanding of the current level of research in the field of Teacher Education through ODL. Keywords: Teacher Education, Open and Distance Learning, Instructional activities, delivery modes, Communication approach, Synchronous learning approach, Asynchronous learning approach, Blended learning approach.

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Introduction

The Open and Distance Learning organisations cautiously look for the platforms and appropriate technology-based course delivery modes before launching any new course to cater its learners/users effectively. Heirdsfield, Davis, Lennox, Walker, & Zhang (2007) state that “rapid advances in technology have recently made access to higher education more readily available” (as cited in Amanda R. Hurlbut, 2018, p. 249). The purpose of this review is to put forth the current state and trends of research in the field of Teacher Education through open and distance learning and set future vision in front of the providers of Teacher Education through open and distance learning. To this intention the researcher conducted a review and identified the emerging delivery modes used for instructional activities, communication approaches followed for delivery of instructional activities, research method, sampling techniques and tools for data collection, and the authorship pattern of the articles of Teacher Education through open and distance learning. The comparison

of research articles is carried out to find the trends in Teacher Education through open and distance learning at national and international level.

There are many research topics related with review undertaken in the field of distance education. Mishra (1997) critically analysed the Open Learning, American Journal of Distance Education, Indian Journal of Open Learning, and Distance Education “to reveal the state and status of the subject and research activities on it.” Mishra (1998) reviewed the distance education research literature from the viewpoint of its structure, methodological concerns and priority areas. Mishra (2002) has reviewed the *Indian Journal of Open Learning* from Vol. 1 to Vol.10 (spanning 10 years) and found out the authorship pattern, leading contributors, country-wise and topic-wise distribution of papers, research method, data collection techniques and reference characteristics. Lee, Driscoll and Nelson (2004) have examined research topics, methods, and citation trends using content analysis. Zawacki-Richter, Backer & Vogt (2009) reviewed distance education research from 2000 to 2008 and

analysed the research areas, methods, and authorship patterns. Davies, Howell and Petrie, J. (2010) have explored and summarised trends in research in the topics addressed, research designs utilised, and data collection and analysis methods used in the area of distance education. Ritzhaupt et al. (2010) examined “distance education research by implementing a co-word analysis methodology to identify themes, trends, and structural characteristics in North American distance education literature.” Halverson et al. (2011) analysed the “*American Journal of Distance Education* between the years 2001 and 2010 and found out the trends in topics and categories, methodologies, authors, and word frequency in abstracts and titles.” All the above research reviews/studies have carried out in the area of distance education as a whole. This researcher has not come across the specific review of the articles related with the subject Teacher Education through open and distance learning. This study will put forth the current scenario and trends and set future vision in front of the providers of Teacher Education through open and distance learning.

Methodology

The content analysis technique is used for reviewing the research articles in the area of Teacher Education through Open and Distance Learning. For the purpose, one refereed journal of distance education published in India namely the *Indian Journal of Open Learning* (IJOL) and one refereed journal of distance education published in USA namely the *American Journal of Distance Education* (AJDE) available online in World Wide Web is chosen. All the research articles were studied to collect the required data. In total, 20 volumes of *IJOL* from 1999 (Vol. 08) to 2018 (Vol. 27) were reviewed and 276 published research articles were analysed. Similarly, 20 volumes of *AJDE* from 1999 (Vol. 13) to 2018 (Vol. 32) were reviewed and in total, 301 published research articles were analysed. The total number of samples from both the research articles was 577.

Keeping the research objective in mind to investigate the research articles related with Teacher Education (pre-service and in-service) through ODL the units were chosen. The articles which are directly related to Teacher Education or have studied any aspects of Teacher Education through ODL were selected. To minimise the possibility of exclusion of articles related with Teacher Education through distance education, the researcher scanned the title, abstract, participants, data collection and sampling part of the articles and included the article if it relates to the teacher/faculty/academic education. The articles related with other professional training programmes, doctoral programmes or general education courses are not included in this review.

These selected articles were then classified into different categories. They are: the mode of delivery used for instructional activities, communication approaches followed for delivery of instructional activities, research method, sampling techniques and tools for data collection they used and the authorship pattern of the articles. The researcher used the same terminology/expressions of the delivery mode, communication approach, research method, sampling techniques used and tools for data collection as used by the author/authors in the title, abstract and methodology portion of the articles. While reviewing the article, if any of the above elements were specifically not mentioned or visible then it is reported as ‘Not Mentioned’ in the review.

The *IJOL* had a total of 32 research articles and *AJDE* had a total of 15 articles which fulfill the inclusion criteria related to Teacher Education through open and distance learning.

Analysis

Publication frequency of Articles

Table 1 shows that out of 577 research articles published from 1999 to 2018 in both the research journals *IJOL* and *AJDE*, 47

articles (8.14 per cent) are related to Teacher Education through ODL. Further, it can also be seen that *IJOL* (11.59 per cent) has published more research articles than *AJDE* (4.98 per cent) as far as the publication of research articles related to Teacher Education through ODL is concerned.

Table 1: Classification of Articles of *IJOL* and *AJDE* related to Teacher Education through ODL

Re-search Journal	Total no. of Articles Published	Frequen-cy (Teacher Educa-tion)	Per-centage (approx-imate)
<i>IJOL</i>	276	32	11.59
<i>AJDE</i>	301	15	4.98
Total	577	47	8.14

Delivery modes used

Out of 32 research articles of *IJOL* related to Teacher Education through ODL, only 12 articles (37.5 per cent approximately) have mentioned the delivery mode used in instructional process as per Table 2.

Table 2: Classification of Articles of *IJOL* in Different Delivery Modes Used

S.No.	Delivery Mode	Total article	Percent
1	Computer	1	3.12
2	ICT/education-al/ learning/ teaching tech-nology	1	3.12
3	Multimedia	1	3.12
4	Online/Web/Internet	5	15.62
5	Print	3	9.37
6	Tele-conference	1	3.12
Total		12	37.5

Table 2 shows that the delivery mode 'Online/ Web/Internet' has been used the most (5 articles) for instructional process as far as the articles related to Teacher Education through

ODL is concerned. The delivery mode 'print' is used in three articles for instructional purpose. The delivery modes computer, ICT, multimedia and teleconference also have their presence with 1 article each. From the above observation it can be said that at the national level, the provider of instructional activity for Teacher Education have given the priority to the delivery mode 'online/web/ internet' in comparison to 'print' or other delivery mode.

Table 3 shows that out of 15 research articles of *AJDE* related to Teacher Education through distance education, 14 articles (93.3 per cent) have mentioned the delivery mode used in instructional process.

Table 3: Classification of Articles of *AJDE* in Different Delivery Modes Used

S.No.	Delivery Mode	Total article	Percent
1	Online/Web/Internet	13	86.66
2	Virtual world/ LMS	01	6.66
Total		14	93.3

Table 3 shows that 13 articles have used 'online/web/internet' for instructional process and only one article has used the 'virtual world/LMS' mode for delivery of instructional process.

Communication approach

Table 4 shows that out of 12 articles (37.5 per cent approximately, N=32) of *IJOL* only 11 articles (91.66 per cent approximately, N=12) were found establishing communication approach.

Table 4: Articles of *IJOL* with Regard to Communication Approach

S. no	Delivery Mode	Synchro-nous	Asynchro-nous	Blended/ Mixed	Not men-tioned	Total ar-ticle
1	Com-puter	-	1	-	-	1

2	ICT/IT	-	-	-	1	1
3	Multi-media	-	1	-	-	1
4	On-line/ Web/ Inter-net	-	4	1	-	5
5	Print	-	3	-	-	3
6	Tele-conference	1	-	-	-	1
Total		1	9	1	1	12

Table 4 shows that out of 11 articles, the communication approach of delivery modes of 1 article (9.09 per cent) were synchronous, whereas the approach of the delivery mode of 9 articles (81.81 per cent) were asynchronous. Further delivery mode of 1 article (9.09 per cent) has the mixed or blended communication approach.

Table 5 shows that out of 14 articles (93.33 per cent approximately, N=15) of *AJDE* related with Teacher Education through distance education which mentioned the delivery mode used for instructional process, the communication approach is mentioned in 13 articles (92.85 per cent, N=14).

Table 5: Articles of *AJDE* with Regard to Communication Approach

S. No	Delivery Mode	Synchronous	Asynchronous	Blended/Mixed/	Not mentioned	Total article
1	Online/ Web/ Internet		6	6	1	13
2	Virtual world/ LMS			1		1
Total			6	7	1	14

Table 5 shows that out of 13 articles which mentioned the communication approach of delivery modes, 6 articles (46.15 per cent) were asynchronous and the communication approach of 7 articles (53.84 per cent) were blended/mixed.

Research Method

Out of 32 research articles of *IJOL* related to Teacher Education through distance education, only 25 articles (78.12 per cent approximately) have mentioned the research method used as per Table 6.

Table 6: Articles of *IJOL* with Regard to Research Method

Research Method	Frequency	Percentage (approximately) N=32
Descriptive	12	37.5
Survey	6	18.75
Experimental	3	9.37
Qualitative	2	6.25
Evaluative	1	3.12
Developmental-cum-experimental	1	3.12
Total	25	78.12

It can be observed from Table 6 that out of 25 articles which have mentioned the research method, a majority of the research articles, that is 12 (48 per cent) have used the descriptive research method in the articles of *IJOL* related to Teacher Education through ODL. The survey research method has its presence in 6 articles (24 per cent) followed by the experimental design with 3 articles (12 per cent) and qualitative research method with 2 articles (8 per cent). The evaluative and developmental-cum-experimental research method is used in 1 article (4 per cent) each.

Table 7 shows that out of 15 research articles of *AJDE* related to Teacher Education through distance education, only 11 articles (73.33 per cent) have mentioned the research method.

Table 7: Articles of AJDE with Regard to Research Method

Research method	frequency	Percentage (approximately) N=15
Experimental/ quasi experimental	3	20
Qualitative	2	13.33
Quantitative	2	13.33
Descriptive	2	13.33
Evaluative	1	6.66
Developmental	1	6.66
Total	11	73.33

It can also be seen from Table 7 is that in AJDE out of 11 articles which mentioned the research method the experimental/quasi experimental research method is used in three articles (27.27 per cent) followed by qualitative, quantitative and descriptive method with two articles (18.18 per cent) each. The evaluative research and developmental research method has also showed its presence with one article each (9.09 per cent).

Sampling techniques

Out of 32 research articles of *IJOL* related to Teacher Education through distance education, only 15 articles (46.87 per cent approximately) have mentioned the sampling technique used in the research as can be seen in Table 8

Table 8: Articles of *IJOL* with Regard to Sampling Techniques

Sampling Techniques	Frequency	Percentage (approximately) N=32
Random sampling/ simple random sampling	9	28.12
Stratified random sampling	3	9.37

Purposive sampling	2	6.25
Systematic random sample	1	3.12
Total	15	46.87

It is also observed from Table 8 above that out of 15 articles which have mentioned the sampling techniques used in the articles, the researcher used the random sampling/simple random sampling techniques the most, that is 60 per cent (9 articles). Stratified random sampling technique is used in three articles (20 per cent), purposive sampling in two articles (13.33 per cent) and Systematic random sampling in only one article (6.66 per cent).

Table 9 shows that out of 15 research articles of *AJDE* related to Teacher Education through distance education, only 1 article (6.66 per cent) has mentioned the sampling technique used in the research article.

Table 9: Articles of *AJDE* with Regard to Sampling Techniques

Sampling Techniques	Frequency	Percentage (approximately) N=15
Criterion sampling	1	6.66
Total	1	6.66

Tools for data collection

Out of 32 research articles of *IJOL* related to Teacher Education through distance education, only 22 articles (68.75 per cent approximately) have mentioned the tools for data collection used in the research as can be seen in Table 10

Table 10: Articles of *IJOL* with Regard to Tools for Data Collection

Tools for Data Collection	Frequency	Percentage (approximately) N=32
Questionnaire/ structured questionnaire/ opinionnaire	10	31.25

Scale/standardised scale / reaction scale	2	6.25
Multiple-2 tools	3	9.37
Multiple- more than 2 tools	3	9.37
Interview	1	3.12
Test/test Items	3	9.37
Total	22	68.75

It can be seen from Table 10 that out of 22 articles which mentioned the tools for data collection, a major number of articles, that is 10 (45.45 per cent) of *IJOL* have used 'questionnaire' as a tool for data collection. Interestingly 6 articles (27.27 per cent) have made use of multiple tools, that is two or more than two tools for data collection.

Table shows that out of 15 research articles of *AJDE* related to Teacher Education through distance education, 14 articles (93.33 per cent) have mentioned the tools for data collection used in the research article.

Table 11: Articles of *AJDE* with Regard to Tools for Data Collection

Tools for Data Collection	Frequency	Percentage (approximately) N=15
Interview	2	13.33
Questionnaire	3	20
Online questionnaire	2	13.33
Document Analysis	2	13.33
Essays	1	6.66
Pre-test post-test	1	6.66
Multiple tools (Interview and questionnaire)	2	13.33
Social Network Analysis (SNA)	1	6.66
Total	14	93.33

It can be observed from Table 11 that out of 14 articles of *AJDE*, which have mentioned the tools for data collection, five articles

(33.33 per cent) used the 'questionnaire/online questionnaire' tool in the research articles. Further, the researcher used other tools for data collection such as interview, document analysis and multiple (interview and questionnaire) tools in two articles (13.33 per cent) each. Essays, pretest post-test and social network analysis (SNA) tools are also used in 1 article each (6.66 per cent).

Authorship pattern

The authorship pattern of research articles of *IJOL* related to Teacher Education through distance education in Table 12 shows that single authors have contributed the major number of articles, that is 18 (56.25 per cent). There are 13 articles (40.62 per cent) contributed by 2 authors. Interestingly, there is 1 article (3.44 per cent) contributed by 5 authors.

Table 12: Authorship Pattern in *IJOL*

Number of Authors	Frequency	Percentage (approximately)
1	18	56.25
2	13	40.62
5	1	3.44
Total	32	100

The authorship pattern of research articles of *AJDE* related to Teacher Education through distance education in Table 13 shows that the articles contributed by single authors shares the space equally with the articles contributed by 2 authors with 4 articles (26.66 per cent) each. Three authors each have contributed 5 articles (33.33 per cent), whereas 2 articles (13.33 per cent) are authored by 4 authors each.

Table 13: Authorship Pattern in *AJDE*

Number of Authors	Frequency	Percentage (approximately)
1	4	26.66
2	4	26.66
3	5	33.33

4	2	13.33
Total	15	100

Result and Discussion

1. The data related to the publication frequency of research articles related to Teacher Education through ODL published at the national and international levels in distance education revealed that in total, both the research journals are giving adequate space (8.14 per cent) to the research articles related to Teacher Education through distance education. However, the *IJOL* (11.59 per cent) has far ahead from *AJDE* (4.98 per cent) in giving space to the research articles related to Teacher Education through ODL.
2. The data related to finding out the most used delivery modes in published research articles at the national and international levels for Teacher Education through ODL shows that out of 47 articles (32 articles in *IJOL* and 15 articles in *AJDE*), only 26 articles (55.31 per cent) have mentioned the delivery mode. However, research articles of *AJDE* with 14 articles (93.33 per cent) is far ahead from *IJOL* with 12 articles (37.5 per cent) mentioning the name of delivery mode. Almost all the articles of *AJDE* (14 out of 13) have used 'online/web/internet' delivery mode for Teacher Education through ODL. From the above observation, it can be said that at an international level the providers of instructional activities for Teacher Education are mostly using advanced delivery mode (in terms of technology and communication approach) with the help of new media technologies and the use of conventional delivery modes such as 'print', 'audio/video' 'CD/DVD', 'radio', 'television', etc. has declined drastically. However, at the national level, out of 12 articles of *IJOL*, 5 articles have used 'online/web/internet' which is followed by 'print' delivery mode with 3 articles. It can be ascertained from the analysis
3. The data related to communication approach revealed that the providers of the instructional activity in published articles of *IJOL* related to Teacher Education through ODL preferred the asynchronous approach over synchronous or blended/mixed approach. Whereas in *AJDE* published articles related to Teacher Education through ODL used the asynchronous approach (6 articles) and blended/mixed approach (Using both synchronous and asynchronous approach) having 7 articles in it. It is also observed that asynchronous approach is the most used approach (62.5 per cent) at the national and international levels with 15 articles out of 24.
4. The data related to the research methods used revealed that the majority of the research articles, that is 12 in number, (48 per cent) have used the descriptive research method in the articles of *IJOL* related to Teacher Education through ODL. This result is consistent with other results reported. Mishra (2002) reported that descriptive method (34.12 per cent) was the major approach adopted in the papers published in *IJOL*. In his review of articles published between 1991 and 1996 in *AJDE*, *DE*, *JDE*, and the *Indian Journal of Open Learning*, Mishra (1997) reported a percentage of 47.6 per cent of descriptive papers. However, in the articles of *AJDE* the experimental/quasi experimental research method is used the most in 3 articles (27.27 per cent). This result is not similar to the result of Halverson et al. (2011) who have found the most frequently used methodology to be survey-based research, the method used in more than one-quarter (26.2 per cent) of the studies published by *AJDE*.
5. The data related to the sampling techniques used reveals that in the articles published in *IJOL* related to

that 'online/web/internet' is the most used (69.23 per cent) delivery mode for Teacher Education through ODL at the national and international level.

Teacher Education through ODL, the researcher used the random sampling/ simple random sampling techniques the most, that is 60 per cent (9 articles, N=15) whereas in *AJDE*, only 1 article (7.69 per cent) has mentioned the sampling technique used in the research article.

6. The data related with tools for data collection reveals that a majority of articles of *IJOL*, that is 10 (45.45 per cent) have used the 'questionnaire' as a tool for data collection. When compared, this result shows similarity with Mishra (2002) which reports that the use of questionnaire and scale was in 82.44 per cent cases in the articles of *IJOL*. Similarly, in research articles of *AJDE* researcher have used questionnaire/online questionnaire in 5 articles (33.33 per cent). In both the journals, a total 36 articles have mentioned the tools for data collection and majority of articles (41.66 per cent) have used 'questionnaire/online questionnaire' for data collection.
7. The data related to authorship pattern of research articles of *IJOL* reveals that the single authors have contributed the majority articles, that is 18 (56.25 per cent) whereas 14 articles (43.75 per cent) were contributed by multiple authors. This result demonstrates consistency with the results reported by Mishra (1997) single authors' contributions in Distance Education are more common (61.49 per cent). Mishra (2002) again reported that single authors have contributed 69.45 per cent of papers whereas multiple

authored papers constitute 30.55 per cent. The data related to authorship pattern of research articles of *AJDE* revealed that the majority of research articles, that is 11 in number (73.33 per cent) were contributed by multiple authors. This result is consistent with the result reported by Mishra (1997) that in *AJDE* multiple author papers constitute 53.75 per cent, indicating a trend in collaborative research.

Conclusion

An analysis of 20 years for *AJDE* and *IJOL* shows that both the research journals are giving adequate space to the research articles related to Teacher Education through distance education. 'Online/web/internet' is the most used delivery mode for Teacher Education through ODL at the national and international levels. It is also observed that asynchronous communication approach is the most used approach at the national and international levels for Teacher Education through ODL. At the national level, the trends for research is inclined towards a descriptive research method whereas experimental/quasi-experimental research method is used for Teacher Education at the international level. The random sampling/simple random sampling technique is used the most at the national level. 'Questionnaire/online questionnaire' is the preferred tool for data collection in *IJOL* and *AJDE*. Single authorship pattern is more prevalent in *IJOL* whereas *AJDE* is consistent in showing a trend towards collaborative research.

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