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Peer Reviewed

Department of Library and Information Science
Rabindra Bharati University
Kolkata



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Editor

Dr Sudip Ranjan Hatua



**Department of Library & Information Science
Rabindra Bharati University
Kolkata, India**

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About the Journal

The RBU Journal of Library & Information science is a scholarly communication for education, research and development of the Library & Information science field. It is published annually in print format only. The first volume was published in 1997. It received ISSN (0972-2750) in the 5th volume in the year 2001. From its 17th Volume published in the year 2015 the journal become peer-reviewed by the eminent experts across the country. This Journal was enlisted under *UGC List of Journals No. 45237, Sl. No. 2023* since UGC published a list of research journals published across the country in its website. Later this journal enlisted under *UGC-CARE List w.e.f. 14.6.2019*. Present publication is its 21st Volume published in the year 2019.

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Author's Guide

How to Send an Article?

Submission Guidelines

The RBU Journal of Library and Information Science publishes original research findings, review articles, practice outcome and survey results, integrate and critically examine new information accumulated in recent years in a particular subject field and specifically the following categories in order to cater to the diverse needs of its readership.

1. Research papers may describe completed research efforts with results, analyses and implications to practitioners, and should not exceed 15-20 pages in length.
2. Practice papers may describe new industry practices, tools and methodologies, with emphases on practical issues, problems and solutions, and should not exceed 10-15 pages in length. Papers may also discuss the relevance of theory to practice and applications.
3. Current Trends papers will reflect new or current trends, thinking, perspectives and opinions in research and practice, and should not exceed 8-12 pages in length.
4. Review papers should give a critical and analytical perspective of related books, publications, methodologies, practices, tools or systems, and should not exceed 5-6 pages in length.

Minimum standards for considering the submitted manuscripts for peer-reviewing Papers must be written in English Language. Text files should be prepared in MS Word format double line space.

Page setup: Page size A4, orientation portrait; Margins: mirror margins, top 3 cm, bottom 2 cm, inside 2.5 cm, outside 2 cm, gutter 0.5 cm;

Layout: header 1.7 cm (different odd and even), footer 1 cm, section start continuous, page alignment top; Font - Times New Roman, 12 point. First Heading - 14 bold Times New Roman Second sub heading - 12 bold Times New Roman, Each next sub heading - 12 italics Times New Roman

Preparation of the manuscript:

All original research articles should be structured in the following manner.

- Title: The title should be concise and reflect the entire work of the submitted manuscript. (Written in 14pt bold Times New Roman font size)
- Names of all authors need to be indicated below the title (Written in 12 bold Times New Roman font size)
- More than one author should display side by side with a tab space (5)
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Abstract

Abstracts should clearly state the purpose of the work, methods used, key findings and major conclusion drawn from the work in no more than 500 words. (Written in 12pt italics Times New Roman font size)

Keywords

The author should provide 3 to 6 key words, characterizing the scope of the paper, the main plant material used and the central aspect of the work. Keywords should be presented below the (Written in 10pt bold Times New Roman font size) Layout of article should follow minimum following pattern-

- Introduction: State the background and mention clearly the objective of the present work.
- Literature Review – minimum last ten years
- Problem Identification- Research question and draw hypothesis
- Methodology- All methods used should be clearly mentioned
- Data collection and analysis- How and which method followed? How it has been analyzed?
- Findings- What specific finding have occurred?
- Conclusion - Give the major conclusion from the present study.

Acknowledgement - Acknowledge those persons who helped you in the present study by providing facilities, personal assistance and funding if any.

In text Citation

In text citation is mandatory. One can follow APA style only using surname (year) approach but there must be numbering within square bracket [n] in normal font immediately after the concept of each sentences.

For using Table Chart and Diagram

For each table text or data should use Arial font in 8 size. If a data table is good enough to represent

the concept unnecessary pie, bar or any other diagram need not to be use. The caption of the table should placed under the table in center using Table- No : title format with Arial 9 font italics.

For chart use the same pattern and use Chart- No: tile ; and for figure user Figure- No. : title of the figure.

References & Footnotes

References to already published literature should be numbered consecutively in the text and placed within square brackets. Please adopt correct referencing methods. Papers with incorrect referencing and in-text citation are likely to be rejected.

The citations should be placed at the end of the paper in the sequence as they appear in the text. References to personal communication and unpublished literature should not be placed under references, but should be cited in the text in parentheses. Explanatory material should be given in the appendix. Examples of citations to different types of documents are given below:

(i) Journal Article

1. Gosh, B.K. (2004) Knowledge management policies options. RBU Journal of Library and Information Science. 41(3): 145–150.
2. Neelameghan, A. & Gopinath, M. A. (1967). Research in library classification. Library Science with a Slant to Documentation. 4(2): 356–38

(ii) Book/Monograph

1. Ranganathan, S R. (1957) The Five Laws of Library Science. 2nd ed. Mumbai: Asia Publishing House, 456p.

(iii) Chapter from a Book

1. Neelameghan, A. & Raghavan, K.S. (2012). Frames of knowledge: a perspective of Vedic-Hinduism and Dravidian culture. In: Cultural frames of knowledge, edited by Richard, P Smiraglia & Hur-li Lee. Wursburg, Germany, 2012, 19–61.

(iv) Conference Paper

1. Ragahavan, K.S. & Neelameghan, A. Indic cultures and concepts: Implications for knowledge organization. In 12th International ISKO Conference , 6–9 August 2012, Mysore, India, edited by A. Neelameghan & K.S. Raghavan, 2012, pp. 176–182.

(v) Conference paper (online)

Cannan, J. (2008). Using practice based learning at a dual-sector tertiary institution: A discussion of current practice. In R. K. Coll, & K. Hoskyn (Eds.), Working together: Putting the cooperative into cooperative education. Conference proceedings of the New Zealand Association for Cooperative Education, New Plymouth, New Zealand. Retrieved from http://www.nzace.ac.nz/conferences/papers/Proceedings_2008.pdf

(v) Report

1. Birkler, John; Smith, Giles; Kent, Gleen A. & Johns on, Robert V. (2000) An acquisition strategy, process, and organisation for innovative systems. National Defence Research Institute, RAND, USA, 2000. RAND-MR-1098-OSD.

2. Lindsay, R.S. (1999) Tests of level B suits-protection against chemical and biological warfare agents and simulants: Executive summary. Edgewood Chemical Biological Centre, Aberdeen Proving Ground, MD. July 1999. 14 p. AD-A3 68228; ECBC-TR-047.

(vi) Serial / journal article (online from a database – e.g. EBSCO) Marshall, M., Carter, B., Rose, K., & Brotherton, A. (2009). Living with type 1 diabetes: Perceptions of children and their parents. *Journal of Clinical Nursing*, 18(12), 1703-1710. Retrieved from <http://www.wiley.com/bw/journal.asp?ref=0962-1067>

(vii) Internet – no author, no date

Pet therapy. (n.d.). Retrieved from http://www.holisticonline.com/stress/stress_pet-therapy.htm

(viii) Blog post

Liz and Ellory. (2011, January 19). The day of dread(s) [Blog post]. Retrieved from <http://www.travelblog.org/Oceania/Australia/Victoria/Melbourne/St-Kilda/blog-669396.html>

(ix) Newspaper article

Matthews, L. (2011, November 23). Foodbanks urge public to give generously. *Manawatu Standard*, p. 4.

(x) Newspaper (online)

Rogers, C. (2011, November 26). Smartphone could replace wallets. *The Dominion Post*
Retrieved from <http://www.stuff.co.nz/technology/gadgets/6038621/Smartphone-could-replace-wallets>

(xi) Thesis (print)

Smith, T. L. (2008). Change, choice and difference: The case of RN to BN degree programmes for registered nurses (Master's thesis). Victoria University of Wellington, Wellington, New Zealand.

(xii) Thesis (online)

Mann, D. L. (2010). Vision and expertise for interceptive actions in sport (Doctoral dissertation, The University of New South Wales, Sydney, Australia). Retrieved from <http://handle.unsw.edu.au/1959.4/44704>

(xiii) Wikis (including Wikipedia)

Moodle. (2011). Retrieved November 28, 2011, from Wikipedia: <http://en.wikipedia.org/wiki/Moodle>

The Reviewing Process

All submitted manuscripts are subjected to peer-review by independent reviewers. Peer reviews are done by double blinding method where both the author and reviewer are unaware of each other. Final decision of accepting the article rests with the editor.

For any other type of reference follow APA Style manual

Final Selection

Verifying the Reviewer's comment, finally the editorial board will take decision to publish the paper. As there is limited space once the paper selected may publish in the next volume subject to the availability of space.

Author will be informed if paper is not selected for publication. No explanation will be given to the author for not selection of his/her paper.

Submission Process

All manuscripts must be submitted in MS-Office (.doc) format through e-mail in the following email address- lirbu@gmail.com

After final selection of the article author has to send the corrected softcopy (through e-mail) with two hard copy (one side print) along with CD to the following address along with a DECLARATION stating its originality and not anywhere send for publication before.

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E D I T O R I A L

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It is our great pleasure to publish the ***RBU Journal of Library & Information Science Volume 21, 2019***. This is an important media for scholarly communication in Library & Information Science domain. We merely thrust on the original research output and trends in Library & Information Science education, research and development.

In this occasion we would like to recite the foundation of this department. In order to cope with the emergent professional manpower requirements for various kinds and in different levels of libraries and information centres, Rabindra Bharati University, under the leadership of Prof. Ramaranjan Mukherjee, the then Vice-chancellor established the Department of Library and Information Science at Jorasanko Campus. Initially it was started as evening course in the year 1985 as the first professional Post Graduate degree course in Library and Information Science (i.e. BLibISc) under Post Graduate Faculty of Arts. Now it is located at L-Block, 1st Floor of Ramanuj Building, in Emerald Bower Campus, 56A, B.T. Road. Kolkata-700050.

Presently department is offering 1 year B.Lib.I.Sc (Credit based 2 Semester) Course, 1 year (Credit based 2 Semester) M.Lib.I.Sc Course and PhD Programme. MLibISc course was introduced in 2007, and turn into Semester System since 2013. The course content revised on 1998, 2002 and 2007, 2010, 2013 on the basis of UGC guide lines, UGC model curriculum 2001. However all the latest topic in LIS domain have been included time to time under any of the suitable existing headings of the syllabus.

The department is running by three full time faculties along with few dedicated guest teachers. We perform 6 days per week, Daily 7 and weekly 40 hours Classes between 11am to 6.30pm (Saturday 11am-4.30pm) to complete the course within a year.

Apart from regular activities Department organizes various extension activities like seminar, workshop, extension lecture, special lecture, study tour for field survey works regularly.

More than 90% students of every year engaged various Govt. & Non Govt. Sectors in Permanent, Contractual, Projects etc. by self-effort and sometimes by using departmental source and contact as received data from various sources. Approximately 10% of our student qualified NET/SET examination every year. In this year **Eight** students have selected as College Librarian in West Bengal State

Aided Colleges under UGC Pay Scale through West Bengal College Service Examination. This is a remarkable and proud incidence of the Department.

Department of Library & Information Science is one of the younger departments of its kind compare to other universities in our state. It has produced total 15 PhD scholars (list has given below) till date and this year five research scholars submitted their thesis. five more have registered and pursuing their research among them two are UGC JRF.

Department actively participate in various activities and functions like, Library Day, Librarian's Day, Various Memorial Lectures etc. regularly organized by professional association and organizations.

The Department organizes UGC Sponsored seminar/workshop every year, however, a seminar volume for the first time had been published in the year 2015. Now it become a regular activity of the department and Seminar volumes are being publishing with ISBN Number.

One remarkable activity and contribution of the department is "RBU Journal of Library & Information Science", one of the important interfaces to communicate scholarly community with latest trends in education, research and development of the subject. Inspite of our various shortcomings it is our pleasure to say that we have been continuing this effort regularly since last 21 years. It was first **published in 1997. It received ISSN (0972-2750) in the 5th volume in the year 2001. From it's 17th Volume (2015) the journal become peer-reviewed by the eminent experts across the country. This Journal was enlisted under UGC List of Journals No. 45237, Sl. No. 2023 since UGC published a list of research journals published across the country in its website. Later this journal enlisted under UGC-CARE List w.e.f. 14.6.2019.** Present publication is it's 21st Volume published in the year 2019.

For this volume a notification inviting research articles had been issued on 12.09.2019 through emails and online sites like <https://lisrbu.wixsite.com/dlis> and <http://dlis.rbu.tripod.com/new.html> locally, nationally and globally. The last date of receiving articles was 30th October 2019. We find a good response and received 62 very good research articles from the research scholars, teachers, students and library practitioners from all over the country and aboard. All are rich in content. However, after thorough review the editorial board primarily selected twenty articles to send for peer review following blind peer review process by the eminent experts in Library & Information Science across the country and finally approved 12 articles for publication by the peer reviewers. I strongly believe articles which we could not accommodate in this volume will be published in any other journals. I also hope that all the authors will continue this support by sending their research article for our forthcoming volumes.

I convey my sincere gratitude to all authors, board of editors, reviewers, university authority, publication division of Rabindra Bharati University and printers to make it success.

Good wishes to all.

(Dr. Sudip Ranjan Hatua)

Editor

**LIST OF PhD Awarded Scholars from the
Department of Library & Information Science
Rabindra Bharati University**

SL	Name of Research Scholar	Research Topic	Supervisor	Award ed
1	Biswajit Das Thakur	Origin and Development of Publications related to Motion Pictures in Bengali Language: 1897-1997 (a bibliometric study)	Pinaki Nath Mukhopadhyay	2005
2	Keya Basu	প্রযুক্তিবিদ্যার বিষয় শিরোনাম তালিকা (Subject heading list in Technology)	Pinaki Nath Mukhopadhyay	2011
3	Madhab Chandra Chatterjee	বাংলা ভাষায় সমাজ বিজ্ঞানের বিষয় শিরোনাম তালিকা: সীমাবদ্ধতা ও তার সমাধান (Subject heading list of Social Sciences in Bengali Language: limitations and solutions)	Pinaki Nath Mukhopadhyay	2012
4	Sonali Dapsi	Folksonomical study of the articles in Library & Information Science journals published by professional associations, institutions in India	Sudip Ranjan Hatua	2017
5	Gurudas Ghosh	Sources of Information on Himalayas: content analysis	Pinaki Nath Mukhopadhyay	2017
6	Shyamal Ghosh	A model for information services in private technical colleges at West Bengal	Sudip Ranjan Hatua	2017
7	Bapan Kumar Maity	Designing a model to evaluate scholarly publication with special reference to social sciences in India	Sudip Ranjan Hatua	2017
8	Nantu Acharjya	প্রবাসী পত্রিকায় প্রকাশিত রচনা সমূহের বিষয় ভিত্তিক বিশ্লেষণ Prabasi patrikay prakashito rachana samuher bishoy vittik bishleshan.	Sudip Ranjan Hatua	2017
9	Sukanta Kumar Patra	Religious libraries of West Bengal: an evaluative study	Salil Chandra Khan	2018
10	Sayan Palit	Research outcome in Basic Sciences in fundamental research institute in West Bengal: a bibliometric analysis	Sudip Ranjan Hatua	2019
11	Mohitosh Das	Designing a bibliographic information system for scholarly communication on Ganga River in West Bengal: a model based approach	Sudip Ranjan Hatua	2019
12	Swarup Kumar Raj	UGC-INFONET digital library consortium programmes in the universities of West Bengal: an alternative study from users' perspective	Pinaki Nath Mukhopadhyay	2019
13	Arup Bijoli	Local history collection of the district of South 24 Parganas: a model	Salil Chandra Khan	2019
14	Falguni Pal	Professional need of non-academic libraries vis-à-vis contemporary Library & Information Science education in India: a case study	Sudip Ranjan Hatua	2020
15	Koushik Mondal	Application of copy-right laws in Bengali publications in India: problems and realities (In Bengali Language)	Sudip Ranjan Hatua	2020

Application of Bradford law: A Study on Broiler research output

Sk Nausad Kabir & Professor Pijushkanti Panigrahi

Abstract

The study is to test relationship among literature on broiler research and Bradford law of scattering. A total number of 1128 articles related to broiler research during 2004-2018 were collected by consulting the Indian Citation Index (ICI), Scopus, PubMed and Web of Science (WoS) database. A rank list of 91 journals has been prepared out of the collected data. It is found that the dataset does not follow the Bradford law of scattering even with Leimkuhler formulation.

Keywords:

Broiler research, Bradford law of scattering, Leimkuhler formulation, Scientometric study.



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Introduction:

The sources of information have a vital role from the first day of life of all. A right source of information can guide any person to the right direction of his/ her queries. Therefore, choice of right sources of information has a high importance. The information sources may available in any of the form i.e., person, thing and place.

Journals are one of the prime sources of scientific information which contain mainly the research or review articles of any particular discipline. Some journals may cover more than one subject or related subjects. Thus, identifying the core journals of any subject is very much important for academic institutions and library also.

Bradford law of scattering helps to identify the core journals of any subject discipline based on their productivity pattern or total number of citation. Based on the total productivity of journals Bradford formed the concept of zones or groups. All the zones or groups contain equal number of research output. The zone 1 is the nuclear zone with high productivity, after that the second zone with moderate productivity and the third zone with low productivity explains by Bradford. Thus it is expressed as $1: n: n^2$ where n is the Bradford multiplier [1].

2. Literature Review:

Bandopadhyay(1999) applied the Bradford law of scattering on the submitted theses in various discipline as mathematics, physics, mechanical engineering philosophy and political science at University of Burdwan. All the data were collected during 1981-1990 [2]. The result showed that, except political science rest of the study subjects were following Bradford's law.

Sudhier (2010) experimented with the doctoral theses submitted at Indian Institute of Science, Bangalore. But the dataset does not follow the Bradford law [3]. Therefore, Leimkuhler formulation was applied on the collected dataset.

Ram and Paliwal(2014) studied the Bradford law of scattering on the literature of psoriasis published during 1960-2009 [4]. They found that the dataset does not fit into the law. However, the same dataset were adaptable with Leimkuhler formulation.

Singh and Bebi(2014) attempted to test the Bradford law to identify the core journals from the theses of social science [5]. The collected dataset was perfectly fit into the Bradford law.

3. Objectives:

- To prepare a list of journals' productivity in the field of Broiler research in India.
- To identify the distribution of Bradford zones.
- To test whether or not the dataset follows Bradford's law, as well as Liemkuhler formulation.

4. Methodology:

Data from Indian Citation Index (ICI), Scopus, PubMed and Web of Science (WoS) were downloaded for the period 2004-2018. As four

databases were used to collect data, a number of duplicate records were found. After removing all the duplicates, 1128 exclusive records were retrieved for the analysis.

5. Analysis:

A total 91 journals have been used to publish 1128 number of records. (Table 1)

Ran k	No. of journal s	No. of articles	Cumulative no. of articles
1	1	251	251
2	1	190	441
3	1	124	565
4	1	97	662
5	1	67	729
6	1	59	788
7	1	47	835
8	1	23	858
9	1	19	877
11	2	15	907
12	1	14	921
13	1	11	932
14	1	10	942
16	2	8	958
17	1	7	965
23	6	6	1001
27	4	5	1021
32	5	4	1041
37	5	3	1056
55	18	2	1092
91	36	1	1128

Table 1: Journal productivity in decreasing order

Bradford stated that the scientific journals are arranged in decreasing productivity of articles for a particular subject. All the articles have been distributed into several zones, which contain equal numbers of articles. It can be expressed as $1: n: n^2$

To test the applicability of Bradford's law to the dataset, the articles were roughly divided in three equal parts. In this case, each zone accounts for about 376 numbers of articles. Table 2 depicts the data in three Bradford zones.

It may be seen that the Bradford multiplier in the second zone is 2.00 and the third zone is 21.25. The difference in the value of multiplier is too high, almost ten times more. Therefore, it can be said that the dataset doesn't fit into Bradford's law.

Sl. No.	No. of Journals	No. of Articles	Percentage	Bradford Multiplier
1.	2	441	39.096	1
2.	4	347	30.762	2.00
3.	85	340	30.142	21.25
Total	91	1128	100	

Table 2: Distribution of data in Bradford Zones

An attempt has also been made over the dataset of broiler research output to test whether Leimkuhler formulation is followed or not. The number of journals in each Bradford's zone can be derived from the Leimkuhle (1967) proposed model [6]. That can be expressed as,

$$R(r) = a \log(1 + br) \dots\dots\dots (i)$$

While depending on Leimkuhler formulation, the value of 'k' is also calculated by using Egghe (1986) formulation, which denote as Bradford multiplier [7].

According to Egghe $R(r) = y_0$ and $(1 + br) = K$

After taking those values in equation (i) it becomes,

$$y_0 = a \log K \dots\dots\dots (ii)$$

$$\Rightarrow a = y_0 / \log K \dots\dots\dots (iii)$$

$$\text{And, } b = (K - 1) / r_0 \dots\dots\dots (iv)$$

Here, r_0 is the no. of sources in the 1st Bradford's zone

y_0 is the no. of articles in each Bradford's zone

K is the Bradford multiplier.

$$K = (e^y \times y_m)^{1/p}$$

Where, e^y is the Euler's number (value 1.781)

y_m is the highest no. of articles contributed by any journal = 251

T is total no. of journals = 91

P is no. of zones = 3

$y_0 = A/P = 1128/3 = 376$ where A is the total number of articles.

$$\text{So that, } K = (1.781 \times 251)^{1/3} \\ = (447.031)^{1/3}$$

Taking log on both sides,

$$\log K = (1/3) \log(447.031) \\ = 0.88$$

$$K = \text{antilog of } 0.88 = 7.58$$

After getting the K value we can calculate different Bradford zones.

$$\text{The nucleolus zone } (r_0) = T(K - 1) / K^P - 1 \\ = 91(7.58 - 1) / (7.58^3 - 1) \\ = 1.38$$

Different Bradford zone can be obtained by using

the values of K and r_0 .

Nucleus zone (r_0) = 1.38

Zone 1 ($r_0 \times K$) = $1.38 \times 7.58 = 10.4604$

Zone 2 ($r_0 \times K^2$) = $1.38 \times 7.58^2 = 79.2898$

$a = y_0 / \log K = 376 / 0.88 = 427.27$

$b = (K-1) / r_0 = (7.58-1) / 1.38 = 4.77$

Zones	Number of journals	Number of articles	Percentage
1	1	251	22.25
2	11	656	58.16
3	79	221	19.59
Total	91	1,128	100

Table 3: Distribution of journals based on zones

Table 3 indicates that the number of journals in the first zone is one, with 251 papers, which fall short by 125 papers. In the second zone the number of papers cross the limit by 280 papers. The third zone contains seventy nine numbers of journals with 221 papers, which also fall short by 155 papers. From the explanation we cannot say that the dataset follows Bradford law even with Leimkuhler formulation.

Conclusion:

The broiler research literature those collected from Indian Citation Index (ICI), Scopus, PubMed and Web of Science (WoS) does not fit into the Bradford's distribution. The model which is developed by Leimkuhler and its expansion proposed by Egghe was also applied on the present study. But, the test result also failed to prove the Bradford law of scattering. Literature review also showed that a number of

literature is there that's does not follow the Bradford distribution. Therefore, it is not necessary that all the literature on various disciplines should have to follow the Bradford distribution.

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A Study on Use and Impact of Social Networking Sites among future Library Professionals

Junaid Rayini

Abstract

There is an exponential growth in the popularity and use of social networking sites during the last decade. Social networking sites have millions of users around the globe, using SNS for a variety of reasons. A large portion of SNS users comprise youngsters where most of them are students whether a college, university or even a school student. Studies have shown that more than 90% of students use SNS, similar results have been found in this study where 90% of students access social networking sites. Therefore an attempt has been made in this study to find out the effects of SNSs on social as well as academic life of students. A survey of 120 students and research scholars of library and information science in different universities and colleges was conducted. The findings of the study revealed that WhatsApp and Facebook are the most popular social media application among students and they use SNSs for communicating with friends, online learning, searching information as well as for entertainment. It has been concluded that SNSs helps students in arranging discussions with friends, promotes self-learning and improve the reading habits of students but at the same time it distracts the students from studies, causes health problems like obesity, weak eyesight and sleep disorders and promote use of abbreviated language which affects the writing skills and grammar of students. Social networking sites are both boon and curse to the society and for students too. In light of the findings of this study, it is recommended that there is a need for awareness among students regarding the unsaid rules which they should follow while accessing SNSs. They should be taught how to utilize only the positives of social networking sites.



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Keywords

social networking sites, SNSs, social media, Facebook, WhatsApp, academic performance, education, Impact.

Introduction

There is no doubt that social networking sites (SNS) have gained wider acceptance and usability in the past few years. This rapid growth in acceptance of social media applications in a short period is due to its increasingly widespread operation by students [Kirschner and Karpinski, 2010] and they are now one of the most important interacting tools among students and youths especially at the higher level of educational pursuit [1]. Boyd & Ellison [2007] defined SNS as “web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users (friends) with whom they share a connection, and view and traverse their list of connections and those made by others within the system” [2]. Teenagers have embraced these sites as a way to connect with their friends and make new ones, share information, stories and photos of their activities such as birthdays, holiday trips, parties etc. and showcase their social lives.

Harnessing social technologies offer both opportunities and challenges. Social networking sites, on one hand, are highly beneficial for students pursuing higher education and in modernizing the process of self-learning, interaction, collaboration and sharing. However, on the other hand, these applications are also a source of distraction and divert students’ attention from their learning [Ali, Yacoob, Endit & Langove, 2016] [3]. The impact of Social networking sites can be categorised into two main aspects namely positive impact and the negative impact, which arises in terms of the academic performance and engagement due to extensive use of SNS by the youth, especially students in

higher studies [Hamid, Waycott, Kurnia & Chang 2010, as cited in Hettiarachchi, 2017] [4]. A large number of colleges and universities produce graduates, post-graduates, and PhDs in the library and information science. Additionally, certificate and diploma level students are also produced by many institutes thus generating a substantial workforce of the future library and information professionals [Mahesh & Mittal, 2009] [5]. These future professionals are not different from other students, as the students and research scholars in library and information science are also prone to the use of SNSs and their impact. Therefore, the present study has been conducted to find out the effects of social networking sites on academic as well as social life of the students and research scholars in the field of library and information science.

2. Literature Review:

Orlanda-Ventayen & Ventayen [2017] conducted a study to determine the use of social media in education based on the perceptions and practices of teachers enrolled in Pangasinan State University’s Open University Systems [6]. It sought to discover the use of social media in teaching, different school activities and the acceptance of the role and use of social media in education. The results of the study showed that social media contributes to learning, play a vital role in education and help both teachers and students but there are some disadvantages which users need to be aware of. Findings showed that it is a source of distraction for students and is unsuitable for the setting of examinations and quizzes. It is recommended that teachers blend social media with other free learning management systems. Al-rahmi, Zeki, Alias & Saged [2017]

analyzed studies dedicated to social media use for collaborative learning and engagement based on previous research problems of models and theories [7]. Besides, they applied a quantitative approach and surveyed 340 students using a questionnaire. The result showed that students feel social media is useful, enjoyable and easy to use. Moreover, the students had a feeling of satisfaction using it. They believe that social media can be used positively and that it can provide significant interaction, engagement and collaborative learning concerning the Quran and Hadith, thus improving learners' performance. The results of this study also revealed the percentage and frequency of the tools of social media used for collaborative learning, sharing, discussion and publishing.

Chukwuere & Chukwuere [2017] aimed to assess the impact of social media on female student's social lifestyle [8]. They employed a quantitative research methodology involving a questionnaire as a research instrument and surveyed female students in the North-West University, South Africa. The findings showed that social media refines how female students think, interact, communicate, fall in love (find love), their social lifestyle and many more. Ali, Iqbal & Iqbal [2011] conducted a case study in University of Sargodha to analyze the effects of social media on youth [9]. How they use it in daily life and its impact on society through different angles like educational learning, entertainment, job opportunities, health, communication, interaction, enhancing skills, and online shopping. Results show that social media plays an important role in learning and job opportunities. Teenagers mostly use social media for communication with friends and families.

Results also depict that social media cause health problems and affect our cultures. While using social media, users have to remember cultural values, social norms, and Islamic values. Based on the analysis, the study recommended that users of social media should have to remember the purpose of using social media and always use informative sites. Adolescence should use their time wisely instead of wasting their precious time on other social networks like WhatsApp, Twitter, Facebook, and YouTube. To secure the future of children, teachers and parents should check out what they are doing on social media.

3. Objectives

- To examine the level of awareness and usage of different social networking sites among students.
- To find out the purpose of using social networking sites by the students.
- To find out the types of information and content shared by students on social networking sites.
- To assess the effect of social networking sites on students.

4. Research Methodology:

This study includes both primary and secondary sources of data to analyze the effects of social networking sites on the academic and social life of students. Research papers and articles reviewed in this study served as a secondary source of data which is gathered from different databases and journals. The primary data has been collected through a questionnaire that leads to exploring the effects of social networking sites on students. Respondents of this study consist of students and research scholars studying library

and information science in different universities and colleges of Lucknow. The collected data were carefully assessed, tabulated and the results were taken as they were required for the analysis of this study.

5. Data Analysis and Discussion:

Table-1 Demographics of the respondents

Variables		Responses	
		Frequency	Percentage
Gender	Male	43	35.83%
	Female	77	64.17%
	Total	120	100.00%
Age-Group	21-25	79	65.83%
	26-30	31	25.83%
	31-35	7	5.83%
	36-40	3	2.50%
	Total	120	100.00%
Academic Status	B.Lib.I.sc Student	67	55.83%
	M.Lib.I.sc Student	39	32.50%
	Research Scholar	14	11.67%
	Total	120	100.00%

Table 1 shows the demographic profile of the respondents. As can be seen from the table, this study constitutes of 120 respondents among them 77 (64.17%) are female and rest 43 (35.83%) are male. This shows the dominance of female in the field of library and information science. Further in the table age, wise distribution of respondents is shown. As it is mentioned earlier that this study is conducted on students and research scholars, it is reflected in the age group of respondents. The maximum number of respondents 79 (65.83%) belongs to the age group of 21-25, followed by the age group 26-

30 which constitutes 31 (25.83%) respondents while the rest 10 (8.33%) respondents are above the age of 30. Academic status wise distribution of respondents shows that 67(55.83%) respondents are the B.Lib.I.Sc students followed by the M.Lib.I.Sc students 39(32.5%) while 14 respondents are the research scholars.

Access Social Networking Sites	Yes	108	90.00%
	No	12	10.00%
	Total	120	100.00%

Table- 2 Use and Access of Social Networking Sites (SNSs)

Table 2 reveals the use of social networking sites by the respondents. It is found that a large number of respondents 108(90%) use and access social networking sites whether they have multiple social network account or stick to only one, whereas there are 12(10%) such respondents who do not use any of the social networking sites. It is worth mentioning here that all the respondents who do not use SNSs are females and are married. The reason could be the conservative thinking of society where women are not given much freedom as men do and married women are not even allowed to go outside alone but accompanying her husband or relatives. Khan [2017] mentioned in her study that a 28-year-old newly married girl from Aligarh wrote: "He (her husband) questions my character if I talk someone on Whatsapp or other social networking sites, he thinks I am cheating" [10]. Facebook and other SNSs are a taboo in conservative families as they considered to be a platform for finding love and a source of distraction.

SNSs	Responses	
	Frequency	Percentage
Whatsapp	106	98.15%
Facebook	94	87.04%
google+	59	54.63%
Instagram	50	46.30%
Twitter	39	36.11%
Linkedin	20	18.52%
Quora	9	8.33%
Pinterest	8	7.41%
Flicker	5	4.63%
Reddit	2	1.85%

Table-3 Type of Social Networking Sites SNSs used

Data were collected from 120 respondents. Among them 108 use SNSs, so further analysis is based on the respondents who access SNSs. Table 3 shows the type of social networking sites or social media application accessed by the respondents. WhatsApp is not a social networking site in a true sense but a messaging app, but it has some features of social networking such as users can make their profiles, it facilitates social interactions through text, voice, or video. That is why it has been included in the study and the result is that it outshines the Facebook which is found to be the most used Social networking site in previous studies. The results showed that WhatsApp is the most used Social media app among students with a whopping number 106 (98.15%) followed by Facebook which is used by 94 (87.04%) respondents, google+ and Instagram with 59(54.63%) and 50(46.3%) respondents respectively.

SNSs	Ranking				
	I	II	III	IV	V
WhatsApp	75 70.75%	22 20.75%	7 6.61%		
Facebook	23 24.47%	57 60.64%	12 12.77%	2 2.12%	
Instagram	4 8%	8 16%	20 40%	12 24%	5 10%
google+	3 5.08%	8 13.56%	17 28.81%	20 33.9%	7 11.87%
Twitter	1 2.56%	4 16.83%	13 33.33%	12 30.77%	6 15.38%

Table-4 Usage-wise ranking of Social Networking Sites SNSs

It is found in the study that most of the respondents use more than one social networking site. So it was attempted in this study to find out the most used SNS among respondents. For this purpose the respondents were asked to rank the social networking sites they access according to their usage i.e. the SNS they use most should rank I and respectively other social networking sites. Table 4 shows the top 5 SNSs based on the ranking given by the respondents. It is revealed that WhatsApp is placed on top position by 75(70.75%) respondents, followed by Facebook which is ranked first by 27 (24.47%) respondents. 57 (60.64%) respondents ranked facebook at second position followed by What's App with 22 (20.75%) respondents. After going through the table, the final ranking of social networking sites would be as WhatsApp at first rank, Facebook at second followed by Instagram, Google+ and Twitter respectively. Quora, Pinterest and other social networking sites are excluded from the analysis of ranking as they are used by very fewer numbers of respondents. Percentage in the ranking of SNSs is calculated from the total numbers of users of the respective social networking site.

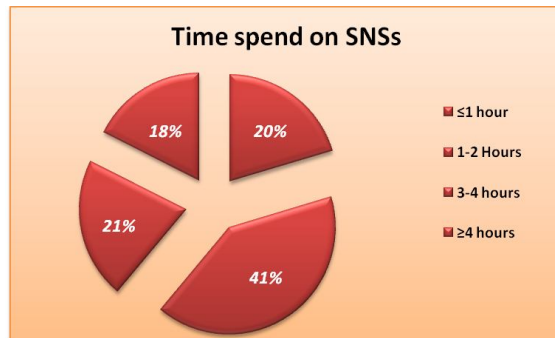


Fig. 1 Time spent on Social Networking Sites

Respondents were asked to mention the amount of time they spend on accessing social networking sites in a day which is shown in the figure-1. It is revealed that 41% respondents spend 1 to 2 hours on social networking, whereas 21% respondents spend 3 to 4 hours, followed by 20% respondents who devote less than 1 hour on SNSs.

Purposes	Response	
	Frequency	Percentage
Communication with friends	101	93.52%
Online learning/self-learning	82	75.93%
Searching information	82	75.93%
Entertainment	70	64.81%
Discuss & share ideas/news/events	55	50.93%
Private messaging/personal chats	47	43.52%
Socialising	35	32.41%
Communication with subject experts/lecturers	28	25.93%

Table-5 Purpose of using Social Networking Sites

Teens use social networking sites for a variety of purposes which are being shown in table 5. Liccardi, et al., [2007] mentioned that communication is vital for enhancing social interactivity for which SNSs were originally built [11]. SNSs have become a medium of communication. It is also reflected in the study as a huge number of respondents 101(93.52%) use SNSs for communicating with friends. Similar findings were reported by Lenhart & Madden, [2007] stating that 91% of teens use these sites to stay in touch with their friends [12]. It is found that 82 (75.93%) respondents use SNSs for self or e-learning and for information, supported by the findings of Brady, Holcomb, and Smith [2010] that social networking sites provide significant e-learning benefits to students [13]. It is also revealed that 70 (64.81%) respondents use social media for entertainment and 55 (50.93%) for sharing and discussing news, ideas or events. Bull et al. [2008] commented on the benefit of social media, that it can somehow bridge the gap among learners, lecturers and the faculty which proves to be accordance with this study as 25.9% respondents use SNSs for communicating with their lecturers or subject experts [14].

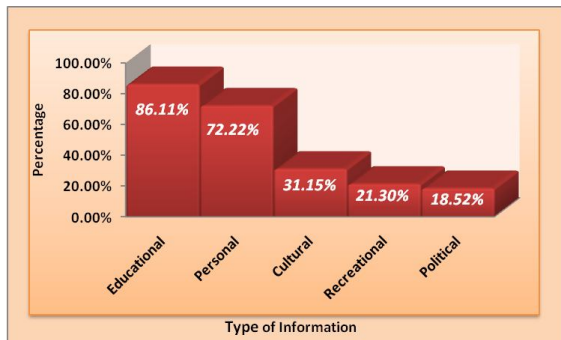


Fig.2 Type of Information shared on Social Networking Sites

Figure 2 displays the type of information being shared by the respondents on various social networking sites. Most of the SNSs were initially started for learning and educational purposes which are proved to be still prevalent. Study shows that 86.11% of respondents share educational information with their peers. Apart from the educational a considerable number of respondents bearing a total of 72.22% shares personal information on SNSs. This finding is supported by Englander et al.[2010] who observed that students spend more time using social media for personal purposes rather than for educational use [15]. Nalwa & Anand, [2003] also mentioned that students like to use the internet for their purposes [16].

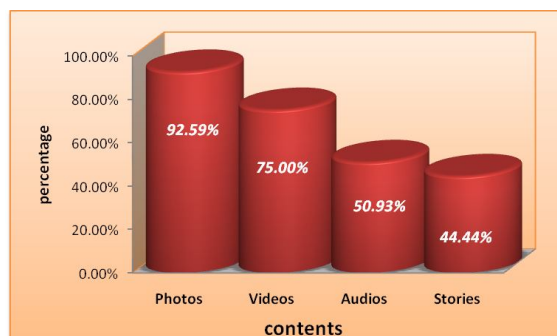


Fig. 3 Type of Contents shared on Social Networking Sites

This study attempted to find out the type of contents shared by students and research scholars on social networking sites. Results have been shown in figure 3. It is revealed that a whopping 92.59% of respondents share photos on social networking sites. 75% respondents share videos. Audios and stories including blog posts are shared by 50.93% and 44.44% respondents respectively..

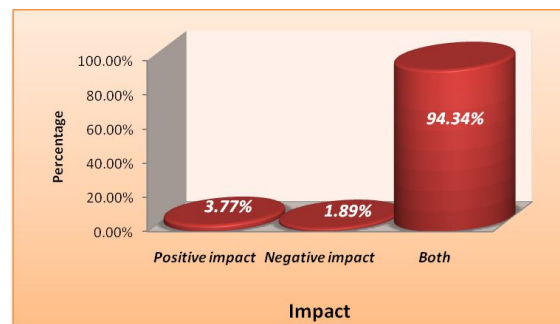


Fig. 4 Impact of Social Networking Sites

Despite the potential benefits, social networking sites have some drawbacks. In terms of the academic performance and social inclusion its impact can be segregated into two main aspects; positive and negative. Therefore, an attempt has been made to find out the impact that social networking sites have on the academic and social life of students, which is shown in the figure. It is revealed that SNSs have both Positive as well as a negative impact on the social and academic life of the students.

Positive Impacts	Response	
	Frequency	Percentage
Group discussion can be arranged with classmates	56	52.83%
Ease of staying in touch with people	58	54.72%
Helpful in receiving announcements for workshops, seminars, assignments etc.	41	38.68%
Helps in building relationships	36	33.96%
Provides access to varied information	34	32.08%
Provides a platform to interact with teachers and subject experts	33	31.13%
Increased rate of participation in group discussions	33	31.13%
SNSs allows making more friends than in real life	27	25.47%
SNSs allows introverts to easily participate in group	34	32.08%
SNSs has improved the reading skills	46	43.40%

Table- 6 Positive Impact of Social Networking Sites

Table 6 identifies the positive impact of SNSs on the social and academic life of respondents. Since the main purpose of SNSs is to enhance the social interactivity, 54.72% respondents mentioned that it provides ease in staying in touch with other people, 56 (52.83%) respondents arrange group discussion with classmates on What's App and other SNSs. SNSs are helpful to 41(38.68%) students in receiving announcements for workshops, seminars, assignments and other important events and 36(33.96%) students found these sites helpful in building relationships. SNSs helps in learning, reading skills of students have been improved using it. SNSs provide access to varied information and offer a platform to interact with

teachers and subject experts to discuss their doubts.

Negative Impacts	Response	
	Frequency	Percentage
It distracts from studies and reduces the level of concentration	56	52.83%
Addiction to SNSs is a problematic issue	33	31.13%
It promotes fake relationships	51	48.11%
It impacts physical and mental health	34	32.08%
It has created health problems like obesity, weak eyesight etc.	47	44.34%
Use of SNSs has decreased the face to face communication	31	29.25%
It causes a sleeping disorder	32	30.19%
It promotes the use of abbreviated language which adversely affects the writing, spelling abilities and grammar	32	30.19%
It results in wasting valuable time	28	26.42%

Table- 7 Negative Impact of Social Networking Sites

After getting the insight into the positive impacts of the SNSs, the next step is to discuss the Negative impacts of the SNSs. Kuppaswamy and Narayan [2010] mentioned that social network websites grab the attention of students and then diverts it toward non-educational and inappropriate actions including useless chatting [17]. Conforming to this, results showed that 56(52.83%) respondents pointed out that SNSs distracts them from studies and reduces their level of concentration. As it is revealed in the previous table that SNSs helps in improving the reading skills but at the same time, it promotes the use of abbreviated language which adversely affects the writing, spelling abilities and grammar

of the students. Apart from affecting the academics of the respondents SNSs are also causing of different types of health problems like obesity, weak eyesight etc. of the 47(44.34%) respondents and give rise to sleeping disorder in 32(30.19%) respondents.

Conclusion and Discussion

The current study has provided an insight into the use pattern of social networking sites by the students and research scholars and their impact on the academic as well as social life of the students. The study shows that the use of social networking sites provides multifold of benefits to the students. It facilitates collaborative learning in the form of group discussion among classmates and peer research scholars; promotes self-learning by providing varied information; it minimizes the gap between the students and teachers as it provides a platform to interact with teachers and subject experts to discuss the issues which could not have been in the class; and much more. But the picture has a darker side too; along with the positive effects the social networking sites also have negative effects on students. Use of SNSs is addictive in nature students get addicted to it and waste their valuable time which could have been utilized in studies; SNSs distract the students from studies and reduces their level of concentration; It promotes the use of abbreviated language among students which adversely affects the writing/spelling abilities and grammar; moreover SNSs have negative effects on the health of students, SNSs create health problems like obesity, weak eyesight etc. and causes sleeping disorder also. Considering the pros and cons of social networking sites it could be suggested that students should be helped in

developing cognitive ability via awareness so that they can themselves analyze how to use SNSs for their benefits, how much time they should spend on SNSs, what type of information they should share and perceive and how to utilize the positives of SNSs. Students must be taught that they should not instantly believe the information they get from social media, they need to understand that everything on social networking sites is not true; they should first verify the information for authenticity. They should be educated to make the ethical use of social networking sites.

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Authorship Pattern of Malaria Research in India: A Bibliometric Study

Sompita Das & Dr Soumitra Sarkar

Abstract

India is the country where Sir Ronald Ross first invented in 1902, the total life-cycle of plasmodium parasite, responsible for the disease malaria. Sir Ross was awarded the prestigious Nobel Prize in Medicine for this invention. Despite this unique invention in India, the people of India greatly suffer from malaria. It is however imperative to appraise the state of malaria in India to trace the impact of this innovative invention to benefit the people. To this regard, it is incumbent to go into the authorship pattern of malaria research in India. Indian Citation Index (ICI) database for the period 2010-2015 has been used for data collection. The result shows that 2014 is the most productive year. Scientists preferred collaborative and single authorship research work. The average degree of collaboration was found 0.85, and the average authorship per paper also gradually increased from 2010 to 2015. The study focuses that till now the research on malaria is not obsolete and also points out the dominancy of collaborative research work over the single authorship exists.

Keywords:

Authorship pattern, Bibliometrics, Collaborative Index, Collaborative Coefficient, Degree of Collaboration, Malaria research, Indian Citation Index.

Introduction:

Malaria is a mosquito-borne infectious disease caused by a kind of parasitic protozoa called *Plasmodium*. Among the infectious diseases, malaria poses a genuine threat to society as most often than not, the disease turns fatal. The disease remains prevalent in India and abroad since ancient time as evidenced by early Vedic literature as well as from ancient Roman text and old English literature. In the 19th century last, many states in India especially West Bengal experienced rapid proliferation of the disease-causing considerable rate of mortality [1].

Sir Ronald Ross, a Scottish physician, worked in the Presidency General Hospital at Calcutta.



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He was the first person to invent the total life-cycle of plasmodium parasite. He proved that the life-cycle of the malaria parasite is completed through female anopheles mosquito. In the year 1902, Sir Ross received the prestigious Nobel Prize in Medicine for this invention [2].

Authorship pattern is one of the most relevant bibliometric tools. Basically, in the field of science and technology, the determination of authorship is a vital component to understand the research productivity and value for the benefit of society. In these days of the information age, the trend of collaborative research has been increasing day by day. Today researchers are not satisfied to work alone. They mostly like to do their research in a collaborative way to overcome the barriers that arise while working as a single researcher. Remarkable research work is also possible if it is free from lots of barriers like a geographical barrier, time barrier, language barrier, cultural barrier, etc. This can only be achieved if collaborative research work is done. The present study concentrates on the bibliometric analysis of authorship pattern on the articles published on malaria research from 2010 to 2015. The data for the purpose have been collected from Indian Citation Index (ICI) database.

2. Review of Literature

The authorship pattern and publication trend are very important tools for professionals. Some literature is discussed below.

Rana and Agarwal (1994), analyzed data of 'Wildlife Review and Fish Review' for the period 1980 to 1989 to study the authorship trend and collaborative research in Indian wildlife and field of fisheries literature [3].

Kannappanavar and Vijayakumar (2001), focused on authorship pattern and degree of collaboration on the International Monetary Fund (IMF) literature [4]. 1,704 data were collected from research activities of Inter-departmental Working Group of Fund Policy Advise of IMF from January 1991 to December 1998.

Arya and Sharma (2012), discussed the authorship pattern, proportion of single versus multi-authored papers, degree of collaborative research in the field of veterinary science [5]. Literature growth in different areas of veterinary science had also been studied and compared with each area. CAB Abstracts which was published by the Centre for Agriculture and Biosciences International was used for data collection for the period 2006 to 2010.

Navaneethakrishnan (2014) depicted the proportion of single versus multi-authored papers, degree of collaboration and average authorship per paper [6]. The Scopus database was used for the data collection during 1960-2012 on Sri Lankan scientific publications in social sciences and humanities.

3. Objectives of the study are:

- To find out the chronological distribution of literature on malaria research.
- To examine year-wise author productivity pattern in malaria research.
- To examine the nature of the authorship pattern in malaria research.
- To analyze the proportion of single-author papers and multi-authored papers.
- To study the research collaboration among authors of malaria research.

- To examine the authors' productivity in malaria research.

4. Methodology:

This study has been done by collecting 576 number of articles published on malaria in different journals, books etc., during 2010-2015. All the data are collected from Indian Citation Index (ICI) database within 01.08.2018. From the whole retrieved data, only the necessary authorship data were taken into a separate MS-Excel sheet. All the findings were explained with tabulation and graphical display.

5. Analysis and result:

5.1 Chronological distribution of published literature

The chronological distribution of published literature shows the data during 2010-2015 on malaria research. It also shows the most productive year/ years of the present study. Table 1 shows 2014 is the most dynamic year at that time when a maximum number of articles have been published on malaria in India.

Sl. No.	Year	No. of Articles	Percentage (%)	Cumulative Frequency
1.	2010	85	14.77	14.77
2.	2011	102	17.71	32.48
3.	2012	106	18.40	50.88
4.	2013	104	18.05	68.93
5.	2014	112	19.44	88.37
6.	2015	67	11.63	100
Total		576	100	

Table 1: Chronological distribution of published literature

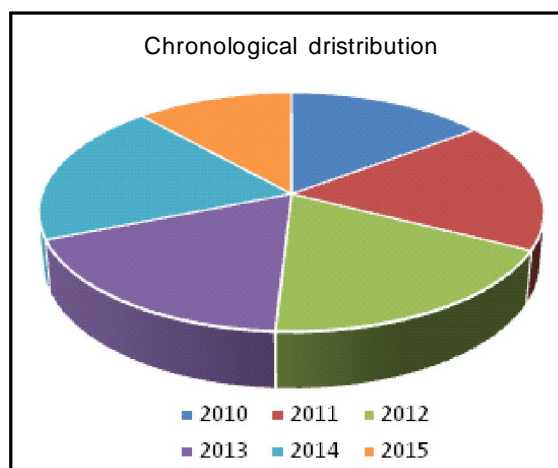


Fig 1: Chronological distribution

5.2 Author Productivity Pattern

Table 2 expresses the year-wise authorship productivity of published literature. For the period from 2010 to 2015, the total number of contributed papers as well as the authorship productivity pattern have been displayed here.

Year	One author	Two authors	Three authors	Four authors	Five authors	Six or more authors	Total
2010	18	18	19	07	12	11	85
2011	12	20	25	24	09	12	102
2012	17	21	27	22	10	09	106
2013	12	24	17	20	13	18	104
2014	16	29	21	19	09	18	112
2015	08	05	14	09	12	19	67
Total	83	117	123	101	65	87	576

Table 2: Productivity Pattern of Authors

Table 3 shows the percentage of the number of authorship productivity. The result shows that the trend of collaborative research becomes high. Only 83 papers (14.4%) are contributed by the single authors whereas 20.3% of the articles are

contributed by two authors. Therefore, it can be said that an increasing trend of multiple authorship has been noticed.

Sl. No.	No. of Authors	No. of Papers	Percentage (%)	Cumulative
1.	One	83	14.4	14.4
2.	Two	117	20.3	34.7
3.	Three	123	21.4	56.1
4.	Four	101	17.5	73.6
5.	Five	65	11.3	84.9
6.	Six or more	87	15.1	100
	Total	576	100	

Table 3: Comparative Productivity of Authors

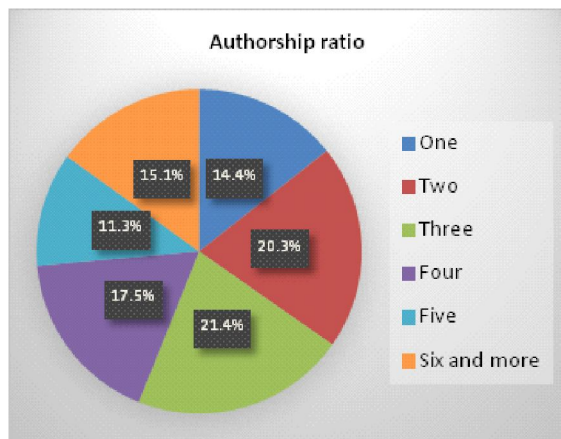


Fig 2: Authorship Ratio

Table 4 explains the percentage distribution of single authorship and multiple authorship. It is observed that in 2010 the percentage of single-authored papers and multi-authored papers were 21.18% and 78.82% respectively. However, in 2015, the percentage of single-authored papers came down to 11.94% and that of multi-authored papers increased to 88.06%. This is due to the advancement of multi-authorship approaches in

malaria research activities. A tendency of collaborative authorship is reflected in Fig. 3.

Year	Single author paper	% NS	Multi-author paper	% NM	Total No. of Papers
2010	18	21.18	67	78.82	85
2011	12	11.76	90	88.24	102
2012	17	16.04	89	83.96	106
2013	12	11.54	92	88.46	104
2014	16	14.29	96	85.71	112
2015	08	11.94	59	88.06	67
	83	14.41	493	85.59	576

Table 4: Year-wise Distributions of Papers

Note: %NS= Percentage of single-authored papers, %NM= Percentage of multi-authored papers.

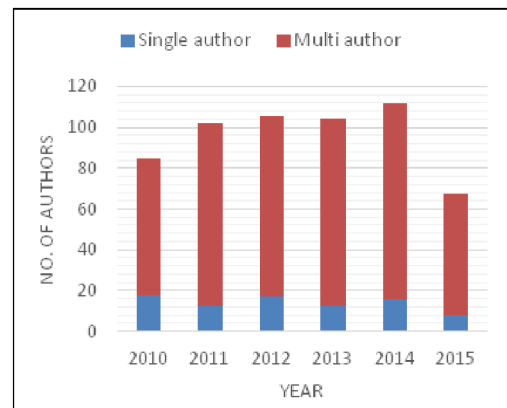


Fig 3: Year-wise single versus multi-authored publications

5.3 Research Collaboration

Collaboration between two or more authors in a particular discipline is not a very simple study. Collaborative Index (CI), Collaborative Coefficient (CC), Degree of Collaboration (DC) are the measures to show the strength of collaboration among the researcher in a discipline. It also focuses on the research trend preferred by the researcher.

5.3.1 Collaborative Index (CI)

Collaborative Index is one of the early measurements for Degree of Collaboration. The mean number of authors per paper, in a particular discipline, is known as Collaborative Index (proposed by Lawani⁷). It has no upper limit. The value of CI is not indicating percentage. Thus, Ajiferuke describes two drawbacks of it, 1) due to the absence of an upper limit and 2) it gives non-zero weight to a single contributor of a paper.

$$CI = \frac{\sum_{j=1}^k j \cdot f_j}{N}$$

Where f_j = number of j-authored research papers published in the discipline during a period of time;

N = total number of research papers published in the discipline during a certain period of time;

k = the greatest number of authors per paper in the discipline during a certain period;

5.3.2 Collaborative Coefficient (CC)

The formula of Collaborative Coefficient is proposed by Ajiferuke [7]. The methodology depends on the counting of fractional productivity defined by Price and Beaver. For a single-authored paper, the author receives full credit, i.e., 1. If there are 2 authors, then each of them receives ½ credits of a contribution. As same, for X number of authors in a contribution, each of the authors receives 1/X credits.

CC express as,

$$CC = 1 - \frac{\sum_{j=1}^k \left(1 - \frac{1}{j}\right) f_j}{N}$$

Here, f_j = number of j-authored research papers published in the discipline during a period;

N = total number of research papers published in the discipline during a certain period of time;

k = the greatest number of authors per paper in the discipline during a certain period of time;

Ajiferuke observed that the value of CC always lies between 0 to 1. When single-authored paper dominated, the value became zero; whereas, if the value tends to higher that indicates the multi authorship value.

Year	Collaborative Index (CI)	Collaborative Coefficient (CC)
2010	3.188	0.540
2011	3.431	0.609
2012	3.292	0.574
2013	3.692	0.617
2014	3.455	0.583
2015	4.223	0.661

Table4: Measures of collaboration

Table 4 shows that the collaborative Index and Collaborative Coefficient for the malaria researchers during 2010-2015. The result shows that the values of CC varied from 0.540 to 0.661. The highest CC (0.661) comes in the year 2015 whereas the lowest CC (0.540) come in the year 2010 that indicates the increase in the domination of multi authorship in India on malaria research.

5.3.3 Degree of Collaboration

The degree of collaboration is a ratio between the number of research papers and the total number of research papers in the discipline during a certain period, suggested by Subramanyam [8]. It is expressed as $C = N_m / (N_m + N_s)$

Where C= the degree of collaboration in any discipline;

N_m = the number of multi-authored research papers in a particular discipline published in a year;

N_s = the number of single-authored research papers in a particular discipline published in a year.

Table 5 focuses on the degree of collaborative research in the field of malaria research. The degree of collaboration is a ratio of the number of multi-authored papers (N_m) with the number of multi-authored papers (N_m) plus several single-authored papers (N_s).

Hence, based on the above formula, the degree of collaboration for the year 2010 to 2015, is ranged between 0.78 to 0.88. From 2010 to 2015, amount of degree of collaboration are 0.78, 0.88, 0.83, 0.88, 0.85 and 0.88 respectively. In the year 2010, the value becomes as less as 0.78 and in the year 2011, 2013 and 2015 the value raises to 0.88. The average degree of collaboration(C) in malaria research is found to be 0.85 that expresses a high degree of collaborative research trend. The trend of a degree of collaboration is graphically expressed in Fig.4.

Year	Single author (N_s)	Multiple authors (N_m)	Degree of Collaboration $C = N_m / (N_m + N_s)$
2010	18	67	0.78
2011	12	90	0.88
2012	17	89	0.83
2013	12	92	0.88
2014	16	96	0.85
2015	08	59	0.88
Total	83	493	Average degree of collaboration= 0.85

Table 5: Degree of collaboration by year

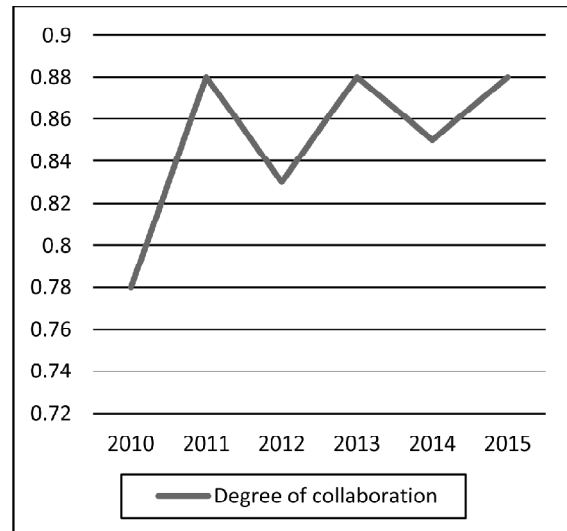


Fig 4: Degree of collaboration

5.4 Author Productivity:

Table 6; expresses the average authors per paper (AAPP) and productivity per author (PPA) in the field of malaria research from 2010 to 2015. The result shows that the Total number of authors per paper is 3.51 and the average productivity per author is 0.28. The highest number of author productivity i.e., 4.22 were published in the year 2015.

Year	Total number of papers (P)	Total number of authorship (A)	Average authors per paper (AAPP=A/P)	Productivity per author (PPA)
2010	85	271	3.19	0.31
2011	102	350	3.43	0.29
2012	106	349	3.29	0.30
2013	104	384	3.69	0.27
2014	112	387	3.45	0.29
2015	67	283	4.22	0.24
Total	576	2024	3.51	0.28

Table 6: Author productivity

Notes: AAPP= No. of authors/No. of papers,
PPA= No. of papers/No. of authors.

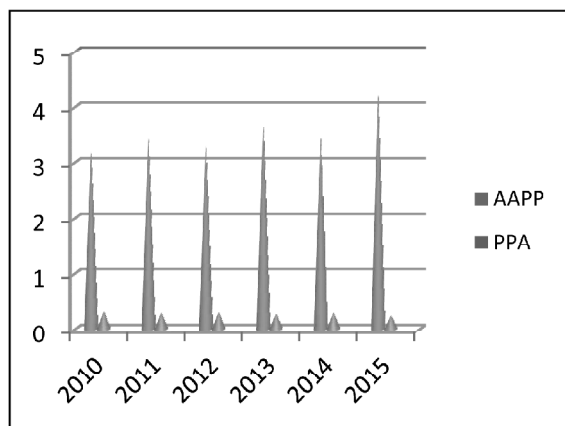


Fig 5: Author productivity

Conclusion

This study clearly shows that 2014 is the most effective year during this study period. Researchers conducting a study on malaria often prefer collaborative research work in present days. The high degree of research collaboration and average authorship per paper directed towards the development of multiple authorship.

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Awareness of Health Information Literacy among Medical Students of Punjab and Chandigarh

Dr Navkiran Kaur

Abstract

This study is an attempt to explore the awareness and understanding of Health Information Literacy among medical students of Punjab and Chandigarh. Health information literacy skills are important for study, teaching and health care. The health information literate medical professionals will be able to serve their communities better. This study employed the survey method of research and data was collected from 126 medical students of 10 medical colleges/institutes of Punjab and Chandigarh by using a structured questionnaire. The findings show that though the majority of students are not aware of the term health information literacy but they agree that it is an important concept and should be integrated into the medical curriculum. Suggestions were invited from students to improve their health information literacy skills and the study concludes with some recommendations for improving awareness of health information literacy among medical students.

Keywords

Health Information Literacy, Health Information Resources, Medical Students, Medical Curriculum, Punjab, Chandigarh



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Introduction:

Medical science progresses rapidly and medical information grows at an explosive rate. The health professionals need to be aware of rapid advancements in their fields. Also, they should know how to search for quality information from the vast amount of available information and need to possess the skills to evaluate the retrieved information before using it. The information explosion and the rapid advancement in the Information and communication technology has made it essential for every individual to evaluate the information before putting it to use. This is a time taking and a difficult skill to learn. The studies conducted so far reveal that health information literacy (HIL)

skills are important for health care as many students lack important competencies essential for finding and evaluating health information. So, we should manage to teach these skills to the medical students who are the future health professionals as these are essential not only for clinical study and teaching but patient care too. Also, they will be able to assist the people with low literacy and health literacy and help develop ways for making the common people health information literate.

The medical libraries are providing access to a vast number of resources but the health professionals need to know how to use these resources and get the best out of these. In the medical profession, information skills are taught at various levels as medical professionals are confronted with information. They are taught about Evidence-Based Medicine which means they have to support their clinical decisions with the best available evidence. The budding young health professionals who have just entered and got an education in the field of medical science can easily learn the competencies and skills needed for information evaluation. This paves the way for health information literacy. Health information literacy as defined by Medical Library Association[1] is “the set of abilities needed to: recognize a health information need, identify likely information sources and use them to retrieve relevant information, assess the quality of information and its applicability to a specific situation, and analyze, understand, and use the information to make good health decisions”. The Medical Library Association, USA has developed several HIL resources for health professionals, library professionals and even health information consumers/ patients. An

attempt was made in this study to explore the awareness and understanding of health information literacy among medical students of Punjab and Chandigarh.

2. Review of Related Literature

The review of the literature reveals several articles discussing health information literacy but studies describing health information literacy in the context of medical students are scarce. Cobus [2] states that information literacy is an essential skill for health sciences students as today's health care system is unprepared for the information age. The study reviews the Institute of Medicine's eight core competencies essential for public health professionals and also described the fundamental role which librarians can play in implementing these competencies in shaping public health education.

Shipman, *et al.*[3], developed and administered a web-based needs survey among hospital administrators and health care providers to study their perceived value of consumer health information resources and the role of librarians in promoting health information literacy in their institutions. The study revealed that administrators and health care providers are well aware of online consumer health information and agree that the provision of health information resources is critically important. The study suggests that health information literacy skills of healthcare providers and patients can be improved through consumer health information services and resources offered by librarians, training by librarians increase knowledge of the importance of HIL and usage of resources like MedlinePlus and Information Rx.

Raj Kumar[4] conducted a study to determine

the information literacy skills of resident doctors of the Postgraduate Institute of Medical Education and Research (PGIMER) Chandigarh and found from the majority of respondents attended orientation lecture delivered by library professionals. Resident doctors use different search tools for patient care and research. Some respondents agreed that they face difficulties in using e-resources due to lack of awareness and knowledge. Majority of doctors suggested that more orientation lecture/programs should be organized about recent advances in Information Technology and e-resources and services available in the library. The study concludes that information literacy can be included in the curricula at various levels of medical education in the form of networks, e-resources, e-journals consortia, medical databases and internet resources, etc.

Hodgens, *et al.*[5], examined the post-graduate health promotion students' self-perceptions of information literacy skills before and after completing an online information literacy tutorial-PILOT. The results of this study showed improvements in information literacy skills after completing the PILOT. Some students continued to have trouble with locating quality information and analysis as well as issues related to referencing and plagiarism. The tutorial was highly beneficial in improving research skills of students and concludes "if students are allowed to self-assess and continue to apply information literacy skills, they will be better equipped to become lifelong learners".

Ivanitskaya, *et al.*[6], present the findings of a study which is based on Research Readiness Self-Assessment (RRSA). The study is based

on a qualitative approach and was administered online among the students of an introductory health course. It revealed that the students after receiving feedback on their skill gaps wish to develop their library skills, Internet skills and information evaluation skills. Also, the study highlights that students need to learn more about plagiarism and citations. It also focuses on the importance of providing self-learning resources and building student-librarian and faculty-librarian connections to develop health information competencies.

Andualem, *et al.*[7], while studying the information needs and information-seeking behaviour of Ethiopian health professionals found that the majority of health professionals had information needs but have limited or no access to major health information resources. The study suggests conducting training on health information resources, improving infrastructures, accessing computer and internet services as a solution to this problem.

Ma and Latham[8] explored the understanding of Florida State University undergraduate students about health information literacy and studied how these students apply their knowledge and skills to find, evaluate, and use health information for self-care. The study showed that these students possess insufficient health information literacy knowledge and skills. The Internet, people (parents, friends and health professionals) and print materials are the major sources of seeking health information for self-care. Accessibility and affordability of the source were identified as major barriers encountered by students for selecting and using sources. This study suggests designing more effective college

health promotion programs and developing objective HIL assessment instruments in the context of health information seeking and use.

Suman and Sharma[9] studied the information literacy skills of faculty and students of Post Graduate Institute of Medical Education and Research, Chandigarh and Pt. B.D. Sharma University of Health Sciences, Rohtak and it was found that all the respondents under study were able to specify their information needs. Internet search engines, online medical databases, textbooks and journals are the frequently used sources and PubMed, MedlinePlus, MDConsult and UpToDate are mostly used databases. The respondents make use of Boolean operators in searching for information and the majority of them rate their information evaluation skills as average.

Brar[10] conducted a case study of Guru Gobind Singh Medical College, Faridkot to examine the digital information literacy skills of health science professionals i.e. teachers and postgraduate students. The study demonstrated that a majority of respondents possess digital literacy skills and electronic resources are used mainly to update knowledge in their respective subject area and to support their research work. Majority of respondents use authenticity and reliability as the most important parameters for the evaluation of electronic information sources. The respondents expressed that the university library and informatics division should take initiative to start a course on information and research skills and it should be included at the postgraduate level. The study concludes with suggestions related to training of health science teachers, organization of information literacy programmes (workshop, seminar etc.) especially for teachers and

postgraduate students and inclusion of information and research skill course in the health sciences curriculum.

Nengomasha, *et al.*[11], studied the health information literacy of students of the University of Namibia and revealed that students are well aware of the importance of health information and know about the various sources of health information. Still, there are some barriers like difficulties in assessing the reliability of sources and difficulties in understanding health information. The students lack advanced health literacy competencies which need to be enhanced. Understanding the fact that health information literacy of healthcare practitioners is critical for patient care, Ann[12] examined the health literacy of these healthcare professionals to explore the methods in which healthcare practitioners seek, evaluate and use research information within professional practice. It was found that the main focus of health literacy is primarily on healthcare consumers' interactions with basic health information and service and the health literacy (and health information literacy) of practitioners received less attention. The study proposes that adaption of evidence-based practice precepts can help improve practitioners' health information literacy. It also suggested that librarians and educators serving the future and current healthcare professionals can offer more informed information literacy instruction which will enable practitioners to provide improved patient care.

Mullan, *et al.* [13], conducted a study of university students enrolled in medical, allied health and nursing degree programs to determine their health literacy levels using the health literacy questionnaire and it was found that health literacy

profiles are different across student groups as the medical students had the highest score while the nursing students had the lowest score. The study suggests that for providing excellent patient-centred care, and also for self-care, future health professionals require a high level of health literacy. So, it recommended that health literacy training modules tailored according to the needs of the student groups should, therefore, be included in university-based health professional degree programs.

Goodman, et al. [14], attempted to examine first-year health sciences students' information literacy skills using a 4-point rubric. It was found that first-year students know how to locate scholarly articles for their assignments and nearly half of the students were competent to locate scholarly articles that were relevant to their topics. Students also possess abilities for selecting authoritative scholarly peer-reviewed sources. The students under study demonstrated varying abilities in summarizing scholarly articles. Also, it was found that students face difficulties incorrectly applying the American Psychological Association (APA) citation style. The study suggests that librarians can provide instruction on improving students' summarization skills and for increasing student proficiency with APA citation style. Additional consultation appointments and tutorials can be provided by librarians.

Haruna and Hu[15] conducted a systematic literature review on international trends in designing electronic health information literacy for health sciences students and found that though the Internet has evolved as an essential source for seeking information for educational projects, academic activities, clinical practice and research,

but health information literacy skills of these students are inadequate. Majority of students possess limited skills for locating information from the Internet, evaluating and effectively using health information. The review concludes to develop and improve health information skillset of health sciences students through full-fledged programs which need to be integrated into health sciences curricula for the effective location, critical evaluation and efficient use of online health information.

The review of the above studies reveals that health information literacy skills are important for health care professionals but budding health care professionals are not much aware of various health information resources. Also, these medical students face problems in locating, evaluating and using health information. The present study attempts to know the awareness and perceptions of these medical students regarding health information literacy and invite suggestions from them to improve their health information literacy skills.

3. Objectives of the Study

The objectives of the present study are:

1. To know about the medical students' awareness and perceptions of health information literacy (HIL).
2. To know about the medical students' awareness of various HIL resources.
3. To study the initiatives taken by colleges/institutes towards HIL.
4. To invite suggestions from medical students for the improvement of HIL awareness and skills.

5. To suggest the role of libraries in improving awareness of HIL among medical students.

4. Scope of the Study

The present study is confined to 10 Medical Colleges/Institutes of Punjab and Chandigarh. The selected medical colleges/institutes are listed below:

1. Adesh Institute of Medical Sciences and Research, Barnala Road, Bathinda
2. Christian Medical College and Hospital, Brown Road, Ludhiana
3. Dayanand Medical College and Hospital, Civil Lines, Ludhiana
4. Gian Sagar Medical College, Banur, Patiala
5. Government Medical College and Hospital, Sector-32, Chandigarh
6. Government Medical College, Circular Road, Amritsar
7. Government Medical College, Patiala
8. Guru Gobind Singh Medical College and Hospital, Faridkot
9. Postgraduate Institute of Medical Education and Research, Sector-12, Chandigarh
10. Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar

5. Research Method Used

Survey method of research was adopted and a questionnaire was designed to collect the data for the present study. The population covered in this study includes 118 MBBS students from 10 medical colleges/institutes of Punjab and Chandigarh, and 08 MD students from PGIMER, Chandigarh. The questionnaires were

distributed to 130 students, and 126 returned the duly filled in questionnaires. So, the response rate was 96.92%.

5.1 Data Analysis and Findings

The responses received from medical students under study are analyzed, tabulated, and presented below:

5.1.1 Demographic Profile of Students

The introductory section of the questionnaire focused on general information about the medical students which covered items on category, gender and age. This demographic information is tabulated below:

Category of students	Number	%
MBBS	118	93.7
MD	08	06.3
Total	126	100
Gender Wise Distribution		
Male	73	58
Female	53	42
Total	126	100
AgeWise Distribution		
Less than 20 Years	09	07.1
20-22 Years	70	55.6
23-25 Years	37	29.3
26 Years and Above	10	08.0
Total	126	100

Table 1: Demographic Profile of Students

Table 1 shows that the majority of respondents (93.7%) are students belonging to MBBS Degree and 6.3% are those pursuing MD Degree. The gender-wise distribution shows that 58% of respondents are male and 42% are female. It can also be seen from the above table that majority of respondents (55.6%) fall in the age group of 20-22 years, 29.3% belong to the

age group of 23-25 years, 8% fall under the category of 26 years and above, and remaining 7.1% come in less than 20 years category.

5.1.2 Information Literacy (IL) Awareness and Perception

It is rightly said that awareness holds the key to success. The same is equally applicable to information literacy. We are living in a world of information overload and info-stress. In such a competitive world it is essential that we become aware of, and empowered with information literacy skills. An attempt has been made to explore medical students' awareness and perceptions of information literacy. The students' responses are given below:

IL Awareness	Number	%
Aware	72	57.14
Not Aware	52	41.27
No Response	02	01.59
Total	126	100
Perception regarding IL*		
Reading Literacy	08	11.12
Information Search Skills	17	23.6
Computer Literacy	05	06.9
Digital Literacy	02	02.7
Cultural Literacy	01	01.3
All of These	45	62.5

Table 2: IL Awareness and Perception

* Multiple responses received.

It can be seen from Table 2 that 57.14% of students are aware of IL but 41.27% are not aware. Among those who are aware of IL, 62.5% expressed that it deals with reading literacy, information search skills, computer literacy, digital literacy, network literacy and cultural literacy. This indicates that they are truly

aware of IL. 23.6% of the respondents equate IL to information search skills only.

5.2.3 Health Information Literacy Awareness, Need and Perceived Importance

Health information literacy is considered to be an essential skill for every individual in general and medical students in particular. To know about the medical students' awareness, need and perceived the importance of HIL a few questions were asked, the responses of these are presented below:

HIL Awareness	Number	%
Aware	36	28.57
Not Aware	87	69.05
No Response	03	02.38
Total	126	100
Need for Health Information Literacy*		
Effective management of health conditions	86	68.2
Discussions with the health professionals	60	47.6
Reading and understanding health information	68	53.9
Ability to use health care equipment (e.g. Thermometer, BP Monitoring Machines, etc.)	53	42.06
Understanding medical prescription labels	47	37.3
Increased patient awareness	75	59.5
Increased patient-doctor participative decision making	59	46.8
Improved health outcomes	82	65.1
Increased service quality	67	53.1
Decreased medical negligence and errors	59	46.8
No Response	16	12.6
Perceived Importance of HIL for Integration in Medical Curriculum		
Yes	116	92.06
No	03	02.38
No Response	07	05.56
Total	126	100

Table 3: HIL Awareness, Need and Perceived Importance

* Multiple responses received.

When asked about their HIL awareness, it was discouraging to find that 69.05% of the respondents were not aware of the term health information literacy before taking this survey. Only 28.57% were aware of HIL. The opinions of the students were sought to know their perception about why HIL is needed. The above table shows that 68.2% of respondents feel that it is needed for effective management of health conditions, closely followed by 65.1% of respondents who said that it is essential for improved health outcomes. Increased patient awareness was suggested by 59.5% of respondents. It was encouraging to know that the majority of students (92.06%) agreed that HIL is an important concept and should be integrated into the medical curriculum.

5.2.4 Awareness about HIL Resources

A question was posed to the students to investigate their awareness of the Medical Library Association's HIL resources and their responses are shown below:

HIL Resources Awareness*	Number	%
HIL Tutorials	08	06.3
HIL Curriculum	11	08.7
Information Rx	10	03.8
National Institute on Aging Toolkit for Trainers	02	01.5
Health Literacy Resources	07	05.5
National Library of Medicine's MedlinePlus Health Literacy Website	18	14.2
No Response	79	62.6

Table 4: Awareness about HIL Resources

It was disappointing to find that majority of the

respondents (62.6%) did not respond to this question which implies that they were not aware of these resources. Only 14.2% of respondents are aware of the National Library of Medicine's 'MedlinePlus' Health Literacy Website, 08.7% were aware of the HIL curriculum, 06.3% were aware of HIL tutorials. Awareness about other HIL resources was also low among medical students.

5.2.5 Initiatives taken by College/Institute for HIL

An attempt was made to know about the initiatives taken by Medical Colleges for raising awareness about HIL and the responses obtained are tabulated below:

HIL Organized by College/Institute	Number	%
Yes	12	09.52
No	47	37.30
Don't know	63	50.0
No Response	04	03.18
Total	126	100
If Attended the Programme, Usefulness of these Programmes		
Useful	09	75.0
Not Useful	03	25.0
Total	12	100

Table 5: HIL Programmes Organized by College/Institute

When asked about the organization of the HIL programme by their College/Institute, 50% of the students did not know about it. 37.3% responded that the college has not organized any such programme. Only 9.52% said that such programmes were organized and the majority (75%) of the students who attended these programmes found these to be useful.

5.2.6 HIL Course Components in the Medical Curriculum

An attempt was made to determine if HIL or any other course component related to HIL is part of the existing medical curriculum and whether the libraries have any input in these courses or not. The table below shows the results obtained.

HIL Course Components in the Medical Curriculum*	Number	%
Health Information Literacy	26	20.6
Medical Informatics	37	29.3
Evidence-Based Medicine	70	55.5
None of these	16	12.6
No Response	11	08.7
Library Staff Involvement in the above said HIL Courses		
Yes	26	20.63
No	70	55.56
No Response	30	23.81
Total	126	100

Table 6: HIL Course Components in the Medical Curriculum

* Multiple responses received.

Table 6 highlights that 55.56% of respondents agreed that evidence-based medicine as part of their curriculum. Also, 29.3% said that they are taught medical informatics. When asked about the involvement of library staff in these courses, 55.56% said that the library has no involvement. No responses were received from 23.81% of respondents.

5.2.7 Students' Opinion about HIL Improvements

The medical students were asked to suggest methods for improving HIL among students. The suggestions received are presented below:

Students' Opinion About HIL Improvements*	Number	%
Lectures by specialist	34	26.9
Seminars/conferences	57	45.2
Training/workshops	65	51.5
One-to-one/group instructions	32	25.3
Online tutorials	13	10.3
Any other	02	01.5
No Response	05	03.9

Table 7: Students' Opinion about HIL Improvements

* Multiple responses received.

It was found that 51.5% of respondents advised that HIL can be improved through training and workshops closely followed by seminars and conferences which were recommended by 45.2% of respondents. Lectures by specialists and one-to-one/group instructions were also significant suggestions provided by 26.9% and 25.3% respondents respectively.

6. Suggestions about HIL Skills

Suggestions were also invited from the medical students regarding the health information literacy skills. Based on the study conducted by Ivanitskaya, *et al.*[6], the respondents were asked to suggest which of these three skills: library skills, internet skills and information evaluation skills they wish to develop. The responses are tabulated below:

Suggestions about HIL Skills*	Number	%
Library Skills	59	46.8
Internet Skills	70	55.5
Information Evaluation Skills	41	32.5
No Response	19	15.07

Table 8: Suggestions about HIL Skills

* Multiple responses received.

Table 8 shows that 55.5% students want to develop their Internet skills which will ensure the gathering of reliable information from the Internet, evaluation of web-based information, and finding and evaluating internet-based resources. 46.8% of respondents are interested in developing library skills which are essential to utilize the library resources better, to learn what the library and its website have to offer, to learn strategies for conducting a literature search, and to obtain scholarly articles from online library databases. Information evaluation skills which are required for identifying scholarly sources of information, differentiating scholarly and useful resources, using citations, and avoiding plagiarism were preferred by 32.5% of the respondents.

Conclusion

The study reveals that though a majority of medical students are aware of the term information literacy but concerning term health information literacy, it was found that majority of them were not aware of the term HIL before taking this survey. It was encouraging to know that the majority of students agree that HIL is an important concept and should be integrated into the medical curriculum. The medical colleges/ institutes are taking some initiatives to promote HIL by organizing HIL programme but the

majority of students are not aware of these programmes. Medical students suggested that training, workshops, seminars, conferences, lectures and instructions can help in improving HIL among students. The Medical Library Association, USA has developed several HIL resources for health professionals, library professionals and even health information consumers/ patients. It was disappointing to find that majority of the respondents did not respond to this question which implies that they were not aware of these resources. It was found that evidence-based medicine and medical informatics are part of the medical curriculum but the majority of students said that the library staff has no involvement in these components. Medical students are interested in developing their Internet skills, as well as information evaluation skills.

Suggestions

It can be concluded that the majority of medical students are not fully aware of health information literacy, as such and the available health information resources and services are underutilized. Students' awareness of health information resources and services need be increased. Faculty, librarians', and healthcare providers' collaboration for promoting health information literacy must be ensured by authorities to empower medical students with health information literacy skills. Medical library professionals can take the lead in promoting and providing health information literacy among their user community. HIL can be incorporated in the medical science curricula. The libraries are already providing access to several web-based resources and services, but the staff should raise

awareness of the users about the availability of these resources. If possible, HIL training should be provided to students and faculty in using these resources and services.

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Calcutta University Journal of Information Studies: an analytical study

Ranajit Kumar Mandal & Prof. Salil Chandra Khan

Abstract

Calcutta University Journal of Information Studies (CUJIS) published by the Department of Library and Information Science (DLIS), University of Calcutta. CUJIS is a leading annually published scholarly communication for education, research and development (R & D) of society along with the LIS field. CUJIS has played a key role in the dissemination of basic and applied knowledge of the LIS field. This research article brings out the results of an analytical study of the journal titled "Calcutta University Journal of Information Studies (CUJIS)" covered in volume 1 (1998-1999) to volume 18 (2016) for 19 years. This research article examines the number of articles, authorship pattern, and year-wise distribution of articles, institution wise distribution of contributions, geographical distribution, and subject wise analysis. It gives the average number of citations per contribution, the ranking of contributors, length of articles, etc.

Keywords

Bibliometric analysis, Calcutta University Journal of Information studies, CUJIS

Introduction:

The Calcutta University Journal of Information Studies (CUJIS) is an annually published scholarly journal and the official organ of the Department of Library and Information Science (DLIS). This research article highlighted the patterns of research publication and the growth of literature in the field of LIS using bibliometric analysis. The word 'Biblio' and Greek word 'metrics'. So, etymologically it stands for the application of mathematics and statistics to the study of bibliography. British librarian Alan Pritchard is generally credited with initiating the terminology "Bibliometrics" in the year 1969. Pritchard defined it as the "application of mathematics and statistical methods to books and other media communication" (Pritchard, 1969) [1]. In India, there is several numbers of print and online LIS journals published for different states and the rate of publication is growing day by day. Reference



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materials are required for up-to-date information in various fields due to the explosion of knowledge and with the rapid changes noticed in all domains of human activity (Chattopadhyay, 2003-04) [2]. This analytical study will help all stakeholders of the academic institutions, mainly the research scholars and LIS professionals. Bibliometrics has several applications within the field of LIS in identifying the research trends among the subject field and the associated subject keywords etc. This analytical study of the papers published in the CUJIS from 1998 to 2016. It helps the researchers in Library and Information Science (LIS) to realize the new areas of research. Calcutta University Journal of information studies (CUJIS) has been selected as the source journal for the present analytical study. This journal is devoted to the advancement and dissemination of the basic and applied knowledge of LIS. All the data of this analytical study has been collected within the last nineteen years up to 2016.

2. Review of the literature

Kirtania (2016) analysed 114 research articles published during 2010 to 2015 in the journal of Educational Media and Library Science. He found mainly the number of research articles and authorship patterns, ranking contributors, distribution of articles and their references in the journal [3].

Roy and Dey (2011) analysed 43 research articles on library and information science in 263 issues Published in 5 volumes from the year 2006 to 2010 in the University News. They found the space allotment of full-length contributions, authorship pattern, author's productivity etc [4].

Kalyane & Sen (1995) conducted a study of 498 research articles published during the period 1984 to 1992 in the Journal of Oilseeds research. They found the space allotment of full-length articles, the number of two of more authored research articles consistently increases, authorship pattern and author's productivity, prominent contributors and distribution of citations [5].

Jena (2006) stated a study of the India Journal of Fiber and Textile research during 1996-2004. Nine volume (21 to 29) containing 35 issues was taken for the research study. He examined the publication trend of this journal such as authorship pattern, citation, the geographical distribution of authors, distribution research articles [6].

Mandal and Khan (2019) analysed 218 research articles in their research study of the journal RBU Journal of Library and Information Science for the period between the years 1997 to 2017. They studied authorship pattern, an average number of references per articles, space allotment of full-length papers, author's productivity etc [7].

Ghosh (2009) started a bibliometric analysis on the journal of the RBU Journal of Library and Information Science from 1997 to 2008 and the research study covered mainly the number of articles, institution wise distribution of papers, citation analysis and forms of documents cited etc [8].

Maity and Hatua (2015) conducted a bibliometric research study on the annals of Library and Information Studies for the period between the years 2010 to 2014. They analyzed 178 research articles in their study and they found that the maximum number of articles contributed

by joint authors. The study showed that out of 178 papers most of the articles were from India and authorship pattern, the geographical distribution of authors, subject-wise distribution of articles etc [9].

3. Objectives

The present research study following are the objectives:

- To identify the number of contributions and the growth of research articles published in the journal during the period 1998 to 2016.
- To examine the length of research articles published in CUJIS in these 19 years.
- To examine the authorship pattern.
- To identify the geographical distribution of research articles and the institution wise contributions in this journal.
- To ranking most productive authors.
- To examine the subject coverage of research articles.

4. Methodology

Today bibliometrics is the important discipline where quantitative methods were employed to probe the scientific communication process by measuring and analyzing various aspects of written materials. In this study bibliometric analysis has been made of its 193 research articles published between 1998-1999 to 2016.

Data Analysis

Year	Volume No.	No of the article in English	No. of the article in Bengali	No. of the total contribution	Percentage (%)
1998-1999	1	4	4	8	4.14
1999-2000	2	8	0	8	4.14
2000-2001	3	11	0	11	5.69
2001-2002	4	8	0	8	4.14
2002-2003	5	8	0	8	4.14
2003-2004	6	9	0	9	4.66
2006	7&8	10	0	10	5.18
2008	9&10	8	0	8	4.14
2009	11	16	0	16	8.29
2010	12	9	12	22	11.39
2011	13	20	0	20	10.36
2012	14	23	0	23	11.91
2013	15	21	0	21	10.88
2014	16	7	0	7	3.62
2015	17	9	0	8	4.14
2016	18	6	0	6	3.10
Total	18	177	16	193	99.93

Table-1: Distribution of Articles (Year Wise)

The Journal CUJIS published 193 research articles during the period of the research study. The result of this analytical study shows that the highest number of publications is 23(11.91%) in the year 2012 and the lowest number of publications is 6 (3.10%) published in the year 2016. It also showed that the research articles are written both in Bengali and English language. Out of 193 articles 16 articles in Bengali and 177 articles in English. It is also observed that an average number of articles published per volume is 10.72.

	<i>Total</i>	<i>Average</i>	<i>Percentage (%)</i>
Number of volumes	18		100
Total number of article	193	10.72	100
Number of the article in Bengali	16	0.88	8.29
Number of the article in English	177	9.83	91.70

Table-2: Average & percentage of Articles in Bengali and English

Table-2 indicates that the CUJIS published 193 research articles during 19 years. Several articles in Bengali is 16 (8.29%) and several articles in English is 177 (91.70%). So it can be said that the average number of Bengali articles is 0.88 and number of English articles is 9.83.

By counting an average number of words of title per article it is found that the total 1992 words have been used in 193 articles during this period. So the average number of words used per article is 10.32.

<i>Year</i>	<i>Number of Authors</i>					<i>Total</i>
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>More than 4</i>	
1998-1999	7	1	0	0	0	8
1999-2000	6	2	0	0	0	8

2000-2001	7	4	0	0	0	11
2001-2002	8	0	0	0	0	8
2002-2003	7	1	0	0	0	8
2003-2004	9	0	0	0	0	9
2006	5	4	0	0	1	10
2008	6	0	0	0	2	8
2009	12	3	0	0	1	16
2010	18	3	0	0	0	21
2011	11	8	0	0	1	20
2012	9	12	0	0	2	23
2013	8	9	2	0	2	21
2014	2	5	0	0	0	7
2015	3	4	1	0	1	9
2016	2	1	1	0	2	6
Total	120	57	4	0	12	193
Percentage (%)	62.17	29.53	2.07	0	6.21	99.98

Table-3: Authorship Pattern

Table-3 reveals the authorship pattern of the articles published during the period of study which indicates that maximum numbers of articles were contributed by single or one authors 120 (62.17%) out of the total 193 articles. 57 (29.53%) double authors or two authors articles

out of the total articles. There was no article in the journal written by more than three or four authors. This study also reveals that the contribution is mostly by a single author. The contributors had shown their experience individually through their writings.

<i>Year</i>	<i>Single</i>	<i>Joint</i>	<i>Total</i>
1998-1999	7	1	8
1999-2000	6	2	8
2000-2001	7	4	11
2001-2002	8	0	8
2002-2003	7	1	8
2003-2004	9	0	9
2006	5	5	10
2008	6	2	8
2009	12	4	16
2010	18	3	21
2011	12	8	20
2012	9	14	23
2013	8	13	21
2014	2	5	7
2015	3	6	9
2016	2	4	6
Total	120	73	193
Percentage (%)	62.17	37.82	99.99

Table-4: Authorship Pattern (Year Wise)

Table-6 reveals the authorship pattern of the articles published during the period of study, an analysis of the authorship pattern as has been given in Table-6.1.3.2 indicates that maximum numbers of articles were contributed by single or one author 120 (62.17%) of the total 193 articles. 73 (37.82%) Joint authors' articles of the total articles. There was no article in the journal written by more than three or four authors. This study also reveals that the contribution is mostly by a single author.

5. Growth & Distribution of Abstracts, Keywords

A details study of every article (total 193) to know the status of the availability of abstracts, keywords, references and cited references etc. it is observed that highest number of cited reference is 213 used in the volume number 15 and the highest number of reference is 277 used in the volume number 13. It also shows that the height number of abstract i.e. 22 number of abstracts are used in volume number 14, this volume also used the highest number of keywords (89) whereas the second height number of the keyword (i.e. 21) is used in volume 15 were 86 articles found which contained abstract the second highest.

So it can be said that an average number of abstract per contribution in all 18 volumes is 0.95 and the average number of keywords per contributions in all 18 volumes is 2.14. It indicates that out of 193 articles, 184 (95.33%) articles are with abstracts and 9 (4.66%) are without abstracts and 92 (47.66%) articles are with keywords and 101 (52.33%) are without keywords.

6. Growth of References and Cited References

CUIJS published 193 research articles during 19 years. It is observed from the study that volume no. 15 shows the highest number of total cited reference (213) and volume no. 13 shows the highest number of total reference (277). An average number of references used per volume is 9.14 and an average number of cited reference has per volume is 4.64. 42.48% of articles were published with references but more articles (57.51%) published without references. 82 articles have been cited in a total of 896 citations.

The cited pattern of CUJIS is upgrading. It is observed that journal published in the year 1998-99, 1999-2000&2000-2001 get only 12 citations.

Year	No. of Articles	Total No. of Reference	Cumulative Reference	Cumulative percentage (%)	Percentage of Total Reference (%)	Rank
1998-1999	8	0	0	0	0	16th
1999-2000	8	21	21	0.18	1.18	15th
2000-2001	11	45	66	0.57	2.54	14th
2001-2002	8	127	193	1.67	7.19	6th
2002-2003	8	50	243	2.10	2.83	13th
2003-2004	9	64	307	2.66	3.62	11th
2006	10	80	387	3.35	4.53	9th
2008	8	51	438	3.79	2.88	12th
2009	16	154	592	5.13	8.72	5th
2010	22	115	707	6.12	6.51	7th
2011	20	277	984	8.52	15.69	1st
2012	23	182	1166	10.10	10.31	3rd
2013	21	267	1433	12.41	15.12	2nd
2014	7	105	1538	13.32	5.94	8th
2015	8	161	1699	14.72	9.12	4th
2016	6	66	1765	15.29	3.73	10th
Total	193	1765	11539	100	99.91	

Table-5: Distribution of Cumulative References (Year Wise)

Table-5 indicates that all 18 volumes (1998-99 to 2016) have 1765 total number of references. Out of 1765 references, the year 2011 has the highest number of 277 (15.69%) and 1998-99 has the lowest number 0 (0%).

7. Ranking of most Productive Authors

The study identified 10 most productive authors for this Journal. Among them Maity, Arabinda and Chakraborty, Biplob is the most productive author with 23 and 18 articles respectively.

Year	Year-wise Length of Articles						Total
	1 to 5	6 to 10	11 to 15	16 to 20	21 to 25	More than 25	
1998-1999	3	4	1	0	0	0	8
1999-2000	2	4	1	0	1	0	8
2000-2001	1	8	1	1	0	0	11
2001-2002	0	3	3	0	1	1	8
2002-2003	0	4	4	0	0	0	8
2003-2004	4	3	2	0	0	0	9
2006	1	5	2	1	1	0	10
2008	1	3	2	2	0	0	8
2009	1	9	3	1	1	1	16
2010	11	9	0	2	0	0	21
2011	0	9	4	6	0	1	20
2012	0	18	2	1	1	1	23
2013	1	11	5	3	0	1	21
2014	0	1	5	1	0	0	7
2015	1	5	1	1	0	0	9
2016	0	4	0	0	2	0	6
Total	26	100	36	19	7	5	193
Percent age (%)	13.47	51.81	18.65	9.84	3.62	2.59	100

Table-6: Length of Articles (Year Wise)

Table-6 shows that the length of the article by page numbers. The table depicts that the maximum number of articles 100 (51.81%) have the length of 6 to 10 pages, followed by 36 (18.65%) articles with 11 to 15 pages, 26 (13.47%) articles with 1 to 5 pages, 19 (9.84%) articles with 16 to 20 pages, 7 (3.62%) articles have the length of 21 to 25 pages and the remaining 5 (2.59%) articles have the length of more than 25 pages.

Conclusion

This bibliometric study of a single journal i.e. Calcutta University Journal of Information Studies (CUJIS) provides a portrait of the concerned journal by indicating the maturity, productivity, quality of the journal. It informs about the research orientation that the influence on the author's choice and the journal supports to disseminate as a channel to communicate or retrieve information for their research needs (Zainab, A.N. 2009). This bibliometric study is based on collected data Volume 1 to Volume 18 i.e. 19 years of the journal "Calcutta University Journal of Information Studies (CUJIS)". This journal has published 193 articles during this period of study. The findings obtained from the study of the author's productivity pattern, citation pattern, authorship pattern, Abstract pattern, length of the articles, keywords pattern, etc. The maximum numbers of contributions are single authors with 120 (62.17%). Most of the articles are from West Bengal while another state contribution is very poor. The study also showed that this journal is proved to be one of the important popular print journals in the field of LIS. There has been a constant increase in the rate of publication of articles. Since 2009 to

2013 that symbolizes the strong trend of its publication pattern.

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Content analysis of the Artha Vijnana Journal articles from 1969 – 1978

Dr Nanaji Shewale

Abstract

Artha Vijnana is a quarterly journal published by the Gokhale Institute of Politics and Economics (GIPE), Pune from 1959 in the subject of social science. Between 1969 and 1978, it has published around 206 articles. Purpose of this article is to quantitatively analyze these articles according to authors collaborations, subject areas covered, content analysis and the geographical locations of the contributors/authors along with their affiliated organisations.

It is observed that 172 of 206 articles have been contributed by single authors which means that there are not many collaborative authorship works. At the same time, most of the contribution is from Indian researchers of Indian Research Institutions and a very few from foreign institutions. The study indicated that research works published during this period dealt with Indian Economic Development, Input-Output Study, Land, Marriage and some issues related to Maharashtra.

Keywords:

Content analysis, authorship pattern, collaborative research, communication channels, Artha Vijnana, Institutional Contributions.



Nanaji Shewale

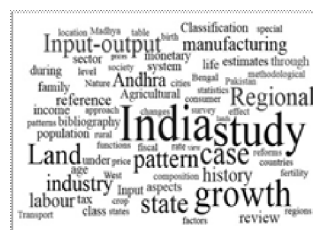
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Introduction:



Dr D R Gadgil, Founder Director of Gokhale Institute of Politics and Economics (GIPE), Pune, identified the thrust of knowledge in economics and started the Journal Artha Vijnana from early March 1959. The journal is being published quarterly and continued till date. On an average, the journal publishes 6 – 7 articles in every issue.

It is one of the peer-reviewed journals that publishes original research works in social sciences in general with more emphasis on economics. Artha Vijnana, literally means Science of Economics.

According to Molesworth Artha means substance, wealth or property [1]. In Hinduism, it is the pursuit of wealth or material advantage, one of the four traditional aims in life. At the same time, Vijnana means the Science. Recently, it has been removed from the UGC list of journals as it failed some criterion although it is being published for more than 50 years [2].

According to Satpute and Sonawane, Content Analysis has to be an important role to get the optimum recall from the information sources generated worldwide [3].

2. Objectives of the Study

The author has conducted this study with the main objective is to analyze the content of "Artha Vijnana" and to make the quantitative assessment of the Journal by way of analyzing some of the features like,

1. To find out the growth in the number of articles on a year-to-year basis.
2. To find out the research contributions from various geographical locations.
3. To find out the collaborative pattern of the researchers/authors.
4. To find out the most contributing authors in the field of Economics.
5. To find out the contributions made by the various organisation from India and abroad.
6. To find out the high frequency of the keywords.

3. Scope & Limitation of the Study

Artha Vijnana has started publishing from 1959 and continues till date. For practical purposes, the scope of the study is restricted to the articles published in the second decade, i.e. from 1969 to 1978. All the articles published during this period are analyzed using various content analysis techniques. At present, the study is limited to 206 articles that are published in the second decade. Analysis of the articles published in the first decade, i.e. 1959 to 1968 has already been carried out by Shewale and Sonwane published in RBU Journal of Library and Information Science [4].

4. Hypothesis of the Study

Every research/study is based on the hypotheses. As defined by Bailey, a hypothesis is a proposition in testable form and predicts a particular relationship between two or more variables [5]. If a researcher thinks that a relationship exists, he should first state it as a hypothesis and then test the hypothesis in the field. In this article, the author has proposed following hypotheses for this study.

1. Majority of the works might have been published by single authors and there may not be many collaborative authorship works.
2. Most of the publications/contribution is from Indian authors/researchers.
3. There should be more contributions from Indian Research Institutions than the foreign institutions.

5. Analysis of "Journal of Artha Vijnana"

Considering the objectives listed above, the present study analyses the journal Artha Vijnana

from different perspectives, like annualized productivity in terms of

1. Year-wise Number of articles published from 1969 – 1978;
2. Locations/countries of the Research Institutions across the world from where the authors have contributed the articles;
3. Identify the collaboration pattern of different authors, i.e. single or multiple authors;
4. The productivity of individual authors, i.e. the frequency of publications by individual authors;
5. Frequency of research institutions from where the articles are contributed and lastly;
6. Weight of the keywords, i.e. the analysis of the number of keywords;

5.1 Number of Publications on yearly basis, i.e. productivity of the Journal

The word publication or contribution is synonymous to articles where publication means the act of publishing. The table below shows the number of issue-wise articles published during the period 1969-1978. The author tried to find out the growth in the number of articles as per the first objective. Here one can notice that there is no growth in the number of articles.

Year / Issue	Mar	Jun	Sep	Dec	Total
1969	08	13	9	9	39
1970	8		8	7	23
1971	8	7	7	7	29
1972	1	7	7	4	19
1973	4	6	5	8	23
1974	3	1	7	5	16
1975	1		1	1	03

1976	7	2	4	1	14
1977	6	7	5	3	21
1978	3	9	4	3	19
Total Number of Articles					206

Table-1 : Number of articles published year and issue-wise

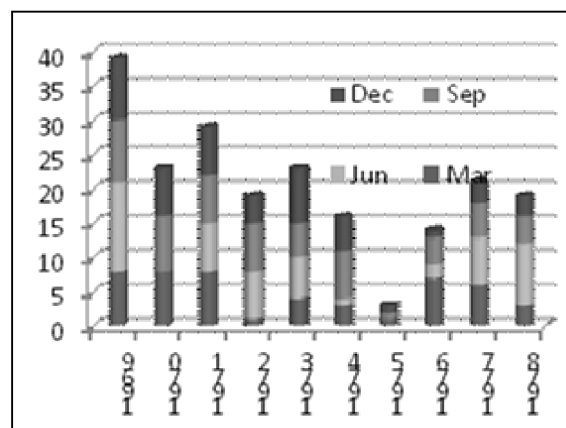


Fig.1 : Number of Publications on yearly basis

On the contrary, it is observed that the number of articles varies due to various reasons. Some of the primary reasons for a varying number of articles is some of the issues are combined. For example, the March and June issues were combined in the years 1970 and 1975. Another reason is special issues having single articles in the issues like Mar 1972, June 1974, Dec 1976 and all the three issues of June 1975 had only one article. Thus, here one can state that there may not always be the growth in several articles published. Following Table Number 2, shows the number of articles published each year, i.e. productivity and the collaboration between the authors, i.e. articles authored by multiple authors.

Year	Number of Publications			Collaboration Rate
	Single Author	Multiple Authors	Total	
1969	33	6	39	0.15
1970	22	1	23	0.04
1971	26	3	29	0.10
1972	15	4	19	0.21
1973	19	4	23	0.17
1974	13	3	16	0.19
1975	0	3	3	1.00
1976	12	2	14	0.14
1977	15	6	21	0.29
1978	17	2	19	0.11
Total	172	34	206	2.41

Table 2: Number of an article published each year and the collaboration pattern

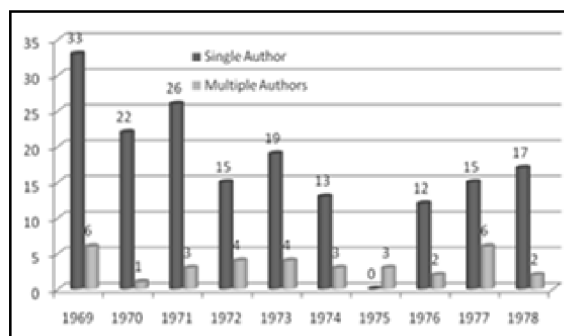


Fig.-2: Graphical representation of the productivity and the collaboration

From the above table and the graph, it can be observed that 206 articles have been published during the period 1969 – 1978 where maximum 172 articles, i.e. almost 80% articles are published by single authors. At the same time, it indicates that only 34 articles i.e. only 20% articles are collaborative. This shows that the authors preferred to work on their own rather than working in a team. This meets the first hypothesis, i.e. “Majority of the works might have been published by single authors” is valid.

5.2 Geographical distribution of research output

The Publisher of the Journal, Gokhale Institute of Politics and Economics (GIPE) established in 1930 is one of the oldest and well-known research institutes in the country. Some of the research studies conducted by GIPE are having global applications and importance. This attracted many researchers to work closely with GIPE and publish their research works in Artha Vijnana. Following table shows the geographical distribution of research output, i.e. the number of articles contributed from different countries.

Sr. No	Name of the Country	Publications	Percentage
1	India	220	88.0
2	USA	17	6.8
3	Australia	3	1.2
4	Nigeria	3	1.2
5	Nepal	2	0.8
6	Bangladesh	1	0.4
7	Ceylon	1	0.4
8	Egypt	1	0.4
9	Pakistan	1	0.4
10	United Kingdom	1	0.4
	Total	250	100

Table 3: Distribution of Publications according to countries

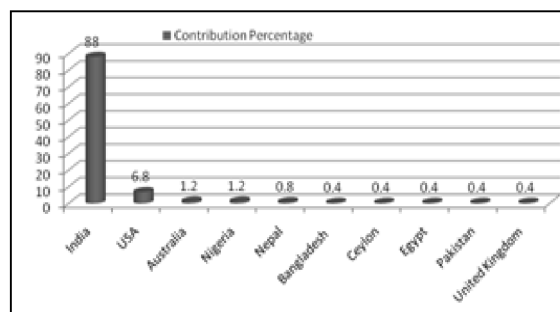


Fig.-3: Graphical representation of publications by countries

From the above table No.3 and Figure No. 2, it can be observed that almost 10 countries are producing 206 articles having multiple authors numbering to 250. Table No.3also gives the ranking of countries that are working in this area. The table also demonstrates the number of contributions of respective countries along with a percentage of contribution. The highest number of contributions are from India, which is over 220 contributors. Thus 83.50% of the total output. Here, the second hypothesis, “Most of the publications/contribution is from Indian authors/researchers” is valid. It is also observed that there is growth in a number of the countries contributing in Artha Vijnana. Here the number of countries has doubled to 10 as compared to the first decade where only 5 countries had contributed their research work (Shewale & Sonwane, 2017).

5.3 Authorship and Collaboration Trend:

Scientific research is becoming an increasingly collaborative endeavour. According to Subramanyam, the nature and magnitude of collaboration vary from one discipline to another and depend upon such factors as the nature of the research problem, the research environment, and demographic factors [6]. Authorship is one aspect that plays a great role in information dissemination and communication activities. Thus, Authors’ contribution to the field of knowledge can be viewed from different patterns, such as single authorship, joint authorship, multiple authorship, etc. Aliyusays, the identification of most productive authors will serve as a basis for creating a sustainable network among the authors and potential researchers and academics [7]. On this lines, the author has tried to analyse the patterns of authorship in all the 206 articles from

1969-1978 which is tabulated in the Table No. 4 showing single and multiple-authored articles and the same is exhibited Figure No. 3 in the graphical representation. According to Gupta, whenever two or more researchers work in collaboration on some scientific project using their physical and intellectual efforts, it is said to be collaborative research [8].

Year	Single Author Articles	Articles with Multiple Authors			Total Publications
	1	2	3	4	
1969	33	5	0	1	39
1970	22	1	0	0	23
1971	26	2	1	0	29
1972	15	3	1	0	19
1973	19	3	0	1	23
1974	13	3	0	0	16
1975	0	2	1	0	03
1976	12	1	0	1	14
1977	15	5	1	0	21
1978	17	2	0	0	19
Total	172	27	4	3	206
%	83.50	13.11	1.94	1.46	100%

Table 4: Authorship and Collaboration Trend

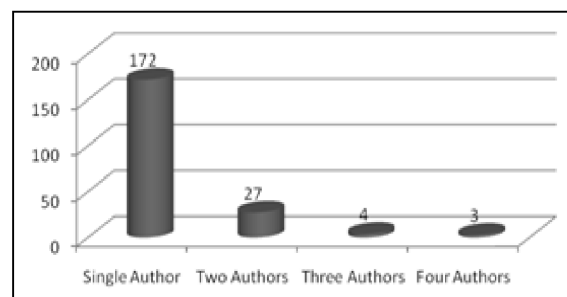


Fig.-4 : Authorship and Collaboration Trend

Thus, from the Table No.4 and the Figure 3, about the year-wise authorship and collaboration trend, it can be observed that single-authored papers accounted for 83.50 % whereas around 13.11% papers have been contributed by two Authors. Around 1.94% and 1.46 % articles have been contributed by three and four Authors respectively, which is almost negligible. Thus, once again the first hypothesis, “Majority of the works might have been published by single authors” is found to be valid.

5.4 Patterns or collaborations among authors

Peters Author is “the person who originates or gives existence to anything” and as “one who sets forth written statements”[9]. Below the Table No. 5, lists out the most productive author who published at least 06 articles. The most productive author for this period in Artha Vijnana is George, P T (06 Articles) from GIPE, Pune, followed by Mathur, P N contributing 05 Articles. Similarly, Pathak, K B and Venkatramaiah, P has contributed four articles each at rank 3.

Author	Country	Articles	Rank
George, P T (GIPE)	India	6	1
Mathur, P N (GIPE)	India	5	2
Pathak, K B (IIPS)	India	4	3
Venkatramaiah, P (GIPE)	India	4	3
Argade, Latika (GIPE)	India	3	4
Arya, Pyare Lal (Delhi)	India	3	4
Bhate, Vaijayanti (GIPE)	India	3	4
Cebula, Richard J (Emory University)	USA	3	4
Dandekar, Kumudini (GIPE)	India	3	4
Dandekar, V M (GIPE)	India	3	4
Gupta, R B (IIPS)	India	3	4

Mahajan, B M (Planning Commission)	India	3	4
Mitra, Ashok K (GIPE)	India	3	4
Pitre, Vidya (GIPE)	India	3	4
Somayajulu, V V N (GIPE)	India	3	4
Author Publishing Two Articles (24x2)		48	5
Author Publishing Single Articles (150x1)		150	6

Table No. 5: Author Ranking

Apart from this, there are nine authors, Argade, Latika; Arya, Pyare Lal; Bhate, Vaijayanti; Cebula, Richard J; Dandekar, Kumudini; Dandekar, V M; Gupta, R B; Mahajan, B M; Mitra, Ashok K; Pitre, Vidya; Somayajulu, V V N; having contributed three articles each. There are 24 authors at rank 2 contributing two articles each. It is also observed that on the lowest side, there are around 150 authors who have published only one article in Artha Vijnana during this period. There is only one foreign author, i.e. Richard J Cebula from Emory University, USA at rank 4 contributing 3 articles.

5.5 Institute-Wise Distribution of Articles

According to Wikipedia, any professional body, university or department of any university or higher education can be treated as an institute [10]. As shown in the Table No. 6 below, as many as 86 institutions from different parts of the world have contributed articles in Artha Vijnana Journals.

No.	Institution Name and Place	Articles	Rank
1	Gokhale Institute of Politics and Economics (GIPE), Poona	97	1
2	Individuals (Affiliations data not provided)	15	2
3	International Institute for Population Studies, Bombay	14	3
4	Indian Statistical Institute, Calcutta, Calcutta	6	4
5	Banaras Hindu University, Varanasi	5	5
6	Indian Statistical Institute, New Delhi, New Delhi	4	6
7	Institute of Economic Growth, Delhi	4	7
8	University of Bombay, Bombay	4	7
9	Andhra University, Waltair	3	8
10	Institute for Social and Economic Change, Bangalore	3	8
11	Madurai University, Madurai	3	8
12	National Council of Applied Economics Research, New Delhi	3	8
13	Planning Commission, New Delhi	3	8
14	Sardar Patel Institute of Eco. and Social Res., Ahmedabad	3	8
15	Bureau of Economics and Statistics, Bombay, Bombay	2	9
16	Demographic Training and Research Centre, Bombay	2	9
17	Directorate of Agriculture, Maharashtra State, Poona	2	9
18	Emory University, Atlanta Georgia	2	9
19	Indian Institute of Management, Ahmedabad, Ahmedabad	2	9
20	Indian Institute of Science, Bangalore, Bangalore	2	9
21	Institute of Applied Manpower Research, New Delhi	2	9
22	La Trobe University, Bundoora	2	9
23	Ministry of Finance, New Delhi	2	9

24	University of Georgia, Athens	2	9
25	University of Missouri, Missouri	2	9
26	University of Washington, Washington	2	9
27	Institutions with Single-Article Contributions 1X59	59	10

Table 6: Institutional Ranking

Table No. 6 ranks the contributions by various institutions worldwide. Overall, there are 250 institutional contributions in Artha Vijnana. During 1969-1978, GIPE, Pune has topped the list with 97 publication followed by the University of Bombay with 11 publications, the University of Pennsylvania with 9 publications. Other than this, there were 3 institutions with 8 publications, University of Delhi contributed 6 publications, 2 institutions contributed 5 publications each, 2 institutions with 4 publications each and Demographic Training and Research Centre has 3 publications. Apart from this, 11 institutions have contributed 2 publications each. Lastly, 43 institutions are having contributed only one article. Thus, majority of the institutions are from India. Therefore the third hypothesis “Majority of the affiliated institution are from India” is valid”.

5.6 Distribution of Keywords

As defined by Wellisch, the keyword is any word that appears either in the natural language text or its surrogate word significant to the index for future document retrieval [11]. Keywords are the words that are used to reveal the internal structure of an author’s reasoning. According to Feather and Sturgis, by Keyword Analysis also help the scientist to keep track of the growth of knowledge in particular subject area [12]. Following Table No. 8 gives the frequency and the rank of important keyword extracted from

the articles published in Artha Vijnana during 1969-1978.

No	Keyword	Frequency	Rank
1	India	58	1
2	Input-Output-Study	14	2
3	Land	12	3
4	Maharashtra	10	4
5	Marriage	8	5
6	Consumer; Family; Industry; Non-Agricultural; Occupations; Population; Production; Rural-India;	6	6
6	Agriculture; Andhra-Pradesh; Banks / Banking; Births; Capital; Consumption; Crop; Economic-History; Growth; Monetary-Policy; Transport; Welfare; West-Bengal; Workers; Census; Class-Conflict; Demography; Fertility;	5	7
8	Census; Goods; Government; Income; Indian-Society; Investment; Labour-Force;	4	8
9	Cities-Of-India; Economic-Growth; Employment; Forest-Lands; Household; Interest-Rates; Internal-Migration; International-Development; IUCD-Insertions; Land-Reform; Madhya-Pradesh; Manufacturing-Industries; Pakistan; Railways; Revenue; Rural-Communities; Saving; Sex-Ratio; State-Taxes; Taxation; Tenancy; Unemployment; Urbanisation;	3	9

No	Keyword	Frequency	Rank
10	Ahmednagar-District; Annotated-Bibliography; Cattle-Economy; Consumer-Behaviour; Consumption-Patterns; Demand; Development; Exploitation; Export; Factory-Workers; Females; Finance; Gender; Gujarat; Indian-Economic-History; Indian-Industries; Indian-Manufacturing-Sector; Indian-Working-Force; Inequality; Inflation; Institutions-In-India; Inter-Regional-Homogeneity; Inter-State-Flows; Land-Legislation; Land-System; Lead-Bank-Survey; Level-And-Cost-Of-Living; Life-Table; Nepal; Occupational-Pattern; Profits; Sacrifice-Formulas; Socio-Economic-Change; Steel-Forgings-Industry; Strikes; Tax-Liabilities; Tenancy-Reforms; Urban-Planning;	2	10
11	Keywords Appearing Once - 281	1	11

The frequency of the keywords indicates the kind of work carried out in GIPE as well as the subject coverage of the journal Artha Vijnana. At the same time, the frequency of the keywords can be spotted in the word-cloud presented on page 1 of this paper.

Conclusion

Artha Vijnana is a peer-reviewed quarterly journal which publishes original articles in Economics and other social sciences. The highest numbers of Articles 39 were published in 1969. During this period as many as 10 countries contributed over 200 articles. India is the top producing country with 220 contributors i.e.

88%. It indicates that the researchers' trend is towards single-author publications. There are as many as 172 articles by single authors. The most prolific author is George PT who had the highest number (6) of the publication. There were 85 organizations involved in research activity. The high-frequency keywords were India (58), followed by Input-Output Study (14), Land related issues (12), geographic region studies (10) and Marriage related articles (8), etc. Overall analysis indicates that there are not be many collaborative authorship works and a majority of the authors and their affiliated institutions are from India.

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Decoding document use pattern by analysing citations in dissertations of postgraduate students of Education of University of Gour Banga: A bibliometric insight

Sandip Majumdar & Tanushree Sarkar

Abstract

The present exploratory study tried to investigate into the pattern of consultation of various sources of information by the students of Master of Arts in Education of University of Gour Banga, Malda. Citations from dissertations of each of twenty-five students (selected by purposive sampling method) in a year for a period of consecutive five years were recorded under different information source head and analysed. The outcome showed that books and monographs (70.82%) have been the preferred documentary source of information to the majority of students, yet a very healthy development has been noticed in the form of a steady rise of the use of periodical publications. On average female students consulted different types of documents more than their male counterpart. Majority of students wrote their dissertations in the Bengali language (67.2%). No use of ebook was noticed. Although the study was conducted on postgraduate students of education, it could be extended to another stream of studies encompassing MPhil and PhD scholars for better understanding of citation trends prevalent among students and research scholars from relatively backward areas like Malda district and motivational aspects of using various sources of information, etc.

Keywords

Citation, Citation pattern, Education, Information sources, Dissertation, e-Journal

Introduction:

“If I have seen further, it is by standing upon the shoulders of giants”- this quote of Sir Isaac Newton [1] from a letter written to fellow scientist, Robert Hooke in February 1675 is a humble reminder of the fact that it is the predecessor's work that lays the foundation for today's thinkers to look beyond into the future. Truly speaking, had it

not been for the discoveries, for the research, for the work initiated and documented by predecessors of any field of knowledge our society would never have progressed this far. Citation is a kind of acknowledgement of contributions of those people in the current work and this practice helps others to reach the source documents which carry the research findings of other scholars in a topic of interest. Further scrutiny of those works may help one to find out advancements in a field, to locate knowledge gap where one possibly may contribute to fill the gap and pave the way for others to take the corpus of knowledge to a new level. Previous contributions of others also may validate research findings of new research work and may further help to trace a particular trend. Because of these very many advantages, citation analysis has gained tremendous momentum. This exploratory study is a kind of bibliometric study based on cited documents in the dissertations of students of Master of Arts in Education, University of Gour Banga, Malda.

2. Literature review

The process of use of documents by graduate students and research scholars for a consultation to complete project or research works itself is an interesting topic which deserves special attention. Broadly speaking, decision-making process regarding the use of a document in a research project occurs at three points or stages namely selecting, reading, and citing [2]. Part one of a longitudinal study was undertaken to understand the decision making process on document selection by academics and students [3]. The outcome of this study proposed eleven criteria including topicality, orientation, quality,

novelty, and authority for judging a document based on document information elements in document records. The five dimensions that were highlighted for judgement of document value are epistemic, functional, conditional, social, and emotional aspect. The follow-up study was done on the same set of academics and students by shifting the focus on the second and third leg of document use triad i.e., reading and citing. The study revealed that all most all the criteria that were identified during document selection process reoccurred in reading and citing [4]. This completes the triad of document selection, reading, and citing.

Again, from the viewpoint of types of resource use, the trend has been tilted heavily in favour of the journal [5]; [6]; [7]; [8]; [9]. This is closely followed by books and monographs [10]. Apart from journal articles and books, conference papers, patents, reports, and theses are also being cited though with a much less frequency. With the above much-generalised trend, comes the discipline-oriented citation pattern in research activities. The resource use pattern of researchers which is reflected in their citations is highly motivated by the differentiating research approach in scientific, social sciences, and humanistic disciplines [11]; [12]. Even within a discipline significant differences in citation pattern exist among students and researchers belonging to different programmes [13]. Journal use and citation of journal articles have gained tremendous momentum in science and applied science research in comparison to other disciplines as a research output in science and technology (S&T) outpaced other disciplines and the essence of recentness has driven researchers of S&T towards journal literature. The rapid stride in

research in new frontiers of S&T has accelerated a decline in the usage of S&T journal literature over a period [5] [6] in comparison to humanities [14] which is reflected in the half-life of literature in respective fields.

There is also a significant difference in use and citation of documentary sources of information between graduate students and research scholars of a programme. With the transition from graduate student to research scholar, increase in research competence becomes phenomenal with a distinct increase in reliance on scholarly journal articles and conference papers among research scholars [15].

The introduction and application of Information Communication Technology (ICT) has divided the landscape of resource access and utilisation into the pre-web era and post-web era [16]. The ease of global access, visibility, and availability of various types and formats of electronic resources have resulted in the steady growth of the use of non-traditional types of resources especially electronic journals and interdisciplinary references [17]; [12], and at the same time decline of the use of monographs [16]. In spite of having all these advantages, there remains a danger of dependence on a citation of electronic resources as URLs frequently suffer from “link rot” [18] with disappearance or change of URLs.

Finally, analysis of citation practices among master’s students and research scholars can be applied to evaluate and justify collection development strategy in a library [4] as students and scholars tend to use their institutional library’s collection as far as possible [5]. This strategy needs to be undertaken with caution as

sometimes doctoral student’s expertise in scholarly literature selection and use must not be taken as the gold standard [19]. Libraries and institutions may nurture the idea of citation-based plagiarism detection [20] as an alternative approach to address academic dishonesty.

3. Objectives of the study

The colossal knowledge bank accessible through both conventional forms i.e., printed material and non-conventional form i.e., digital material available on the internet brings challenges as to which information source to be consulted and to what extent with the inclusion of authority, genuineness of the sources. This has a direct impact on the quality of research and richness of information. Hence comes the pattern analysis of consulted documents. In this backdrop an exploratory study has been undertaken to find the use pattern of documents in the citation of dissertations of the students of M.A in Education under following research agenda:

- Types of documents consulted.
- Several documents belonging to different categories.
- Comparative quantification of different types of documents.
- The year-wise trend in use of documents.
- Relation of use pattern of documents with language preference for writing dissertation report.

4. Hypothesis

Based on the objectives of the study the following hypotheses were considered for validation:

- Hypothesis1: There is no gender-specific pattern of use of documents.
- Hypothesis2: Books and Monographs are the

preferred document of choice for students of Master of Arts in Education.

- Hypothesis3: Students writing dissertation report in Bengali depend more on books and monographs than other resources.

5. Scope and coverage

The present study covered dissertations submitted for the year 2011 to 2015 by students of MA in Education. It has the potentiality to be applied and extended to other departments for the study of the pattern of document consultation by students as well as research scholars covering MPhil and PhD works. This will broaden the scope of study and comprehensive cum comparative insight into citation practices in different disciplines could be unearthed.

6. Methodology

The method applied here is exploratory data collection. Purposive sampling method was applied to draw samples. Twenty-five dissertations from each year were taken as samples based on their availability during the data collection period. Data have been placed under different heads namely Book and Monographs, Periodical Publication, Research Report, Conference & Seminar & Symposia paper, Website, Newspaper & General report. Few of these heads had sub-heads such as a print book, e-book, print journal, e-journal, postgraduate dissertations, M.Phil thesis, published and unpublished PhD thesis, survey report etc. Each of the dissertations was assigned a serial number from one to twenty-five for easy identification. To avoid confusion, name and sex of each of the 25 students were recorded corresponding to their citation records as it was earlier mentioned that due to continuous use and

scattering of dissertations keeping track of whereabouts of a particular dissertation remained a problem throughout data collection activity.

7. Data analysis

7.1 Demographic information

A total of 125 dissertations were consulted for the period from the year 2011 to 2015 submitted by 44% (n=125) male and 56% (n=125) female final semester students pursuing Master of Education degree. The highest number of male students was found in the year 2011 and 2015 whereas highest number of female students were from the year 2014. An average number of male and female students during the period stands at 11 and 14 respectively. During the same period, 3324 documents were cited by 125 students.

7.2 Language preference for writing dissertation

It was noticed that not all the dissertations were written in the English language. Rather, mixed results were found after counting the number of dissertations language-wise in each year. 67.2% (n=125) dissertations were presented in Bengali language and the rest in English language.

YEAR	Language of dissertation		
	Bengali	English	Total
2011	17	8	25
2012	20	5	25
2013	18	7	25
2014	18	7	25
2015	11	14	25
Total	84	41	125

Table1 Year wise share of dissertation according to language

Hence, the majority was for the Bengali language. In the year 2012, 80% (n=25) of the total dissertation was written in the Bengali language which is the highest while comparing all the years.

7.3 Gender wise distribution of documents

Altogether 3324 documents were consulted by 55 male and 70 female students during five years, an average number of documents consulted by male students stand at **23.4** (n= 1287; n/55) whereas in case of female students it is **29.1** (n= 2037; n/70). All these are calculated based on both year wise and gender-wise distribution of documents as stated in the following table:

Year	Student		Distribution of documents								
	Gender	Total	B&M	PP	RR	CP	WS	NP	GR	Total	Total
2011	Male	14	241	13	33	0	0	0	0	287	1287
2012		10	192	46	1	1	19	0	1	260	
2013		9	197	47	4	1	34	0	0	283	
2014		8	147	22	12	3	8	0	1	193	
2015		14	131	107	7	4	14	1	0	264	
2011	Female	11	241	18	24	0	5	1	5	294	2037
2012		15	333	49	34	16	33	0	0	465	
2013		16	376	140	22	6	26	3	3	576	
2014		17	387	68	39	1	27	3	1	526	
2015		11	109	51	12	1	3	0	0	176	

Table2 Gender wise distribution of documents

(B&M = Books & monographs, PP = Periodical publication, RR = Research report, CP = Conference, seminar, symposia paper, WS = Website, NP = Newspaper, GR = General report)

It is also interesting to notice that not only in terms of books but also female students are way ahead in using other types of documents than

male students. No doubt that total number of female students is more than that of the total number of male students but the average number reflects that female students consulted more documents. This finding contradicts hypothesis 1 as a clear cut pattern emerges which is tilted towards female students.

7.4 share of documents

Out of 3324 consulted documents by 125 students, books and monographs remained the major source of information with 70.82% (n=3324) share in comparison to other types cumulatively. A total of 2354 books were consulted by the students during five years of which 60.58% (n= 2354) books were written in English language and the rest were written in Bengali. Highest percentage i.e., 27.63% (n= 1426) of books written in English were consulted in the year 2013 and highest percentage i.e., 26.4% (n=928) of books written in Bengali were consulted in 2011. Not a single student used ebook. Students of the year 2015 consulted the least number of books which occupies only 10.2% (n= 2354).

Next distant share goes to periodical publication with 16.88% (n=3324). Collectively all the students in five years consulted 559 journal articles of which 85.15% (n=559) belonged to print journal and only 29.7% (n= 559) contributed as electronic or e-journal. Contribution of the magazine was negligible and no one used e-zine. Share of a research report, conference & seminar paper, website, newspaper and general report occupy very less space as can be seen in the following graphical presentation:-

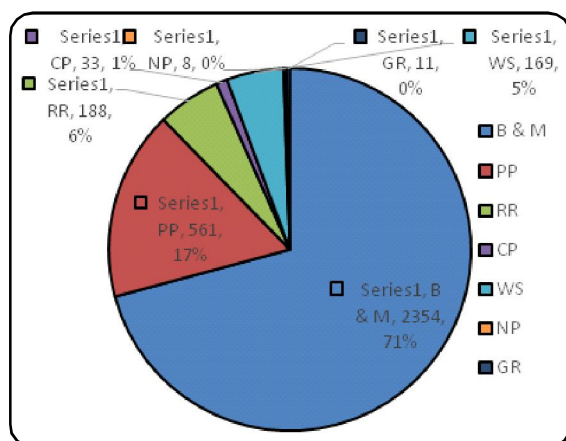


Fig. 1 Share of different category of documents in 5 years

(B&M = Books & monographs, PP = Periodical publication, RR = Research report, CP = Conference, seminar, symposia paper, WS = Website, NP = Newspaper, GR = General report)

Out of 188 research reports, 29.79% (n = 188) belong to PhD theses both published and unpublished. But with a staggering 41.49% (n=188) share, survey report occupies a topmost position. Students consulted more postgraduate (PG) dissertation (18.62%) than MPhil thesis but collectively (35.11%) MPhil and PhD thesis outnumbered PG dissertation.

The above analysis quantitatively supports the fact that books & monographs emerged as the preferred document of choice. Hence it validates hypothesis 2 which states that books & monographs are the preferred document of choice for students of Master of Arts in Education. Moreover, in the five years, a gradual decrease in consultation of books & monographs and gradual increase in the use of periodical

publication was noticed, and this trend touched nadir and zenith respectively in 2015. During the same period, there was almost steady growth of website consultation with the year 2012 and 2013 registered a healthy trend and followed by a slight dip in usage.

7.5 Highest and lowest number of document consultation

An attempt was made to see the gap between the highest and lowest number of documents consulted by students in a particular year. The following table shows the gap widened in the year 2012 and 2013 with maximum gap registered as 122 in 2013 and least as 47 in 2014:

Year	Documents consulted		
	Highest	Lowest	Gap
2011	72	4	68
2012	121	7	114
2013	135	13	122
2014	56	9	47
2015	92	5	87

Table 4 Year wise highest and lowest number of documents consulted by students

An attempt has been made to understand if there was any logical connection between dissertation report prepared by a student in a specific language and his/her dependence on a specific type of documents. From section 4.2.2 it is evident that some students submitted their dissertations written in Bengali (67%) rest submitted in English (33%). If we group the students according to the language of dissertation and map the number of consulted documents by dividing those into 'Books & monographs' and 'Other documents' (sum of some different documents excluding books & monographs).

Now, let us assume Books & Monographs as variable X and other documents as variable Y. Here we may use Pearson's correlation coefficient (r) which measures the strength and direction of the relation between two variables. As we have already grouped the students according to the language of dissertation report I am testing two instances: Instance 1 for measurement of the correlation coefficient between variable X and Y for dissertation report prepared in Bengali and Instance 2 for measurement of the correlation coefficient between variable X and Y for dissertation report prepared in English. For calculation purpose, online social science statistics software was used which is available at <https://www.socscistatistics.com/tests/pearson/default2.aspx>. The calculation is as follows:

For dissertation reports in Bengali

X Values	Y Values
$\Sigma = 1672$	$\Sigma = 385$
Mean = 19.905	Mean = 4.583
$\Sigma(X - M_x)^2 = SS_x = 11909.238$	$\Sigma(Y - M_y)^2 = SS_y = 6444.417$

X and Y Combined, N = 84

$$\Sigma(X - M_x)(Y - M_y) = 541.667$$

r Calculation:

$$r = \frac{\Sigma(X - M_x)(Y - M_y)}{\sqrt{(\Sigma(X - M_x)^2)(\Sigma(Y - M_y)^2)}} = \frac{541.667}{\sqrt{(11909.238)(6444.417)}} = 0.0618$$

The value of $r = 0.0618$ although technically a positive correlation, the relationship between variable X and Y is weak as depicted in the diagram as given below:

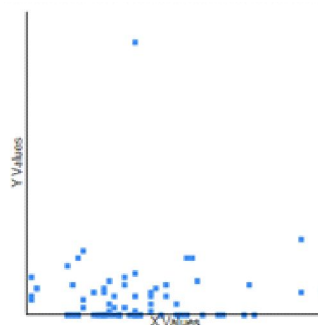


Fig. 4 Distribution of values for X and Y

For dissertation reports in English

X Values	Y Values
$\Sigma = 682$	$\Sigma = 585$
Mean = 16.634	Mean = 14.268
$\Sigma(X - M_x)^2 = SS_x = 7069.512$	$\Sigma(Y - M_y)^2 = SS_y = 17450.049$

X and Y Combined, N = 41

$$\Sigma(X - M_x)(Y - M_y) = 7144.024$$

r Calculation:

$$r = \frac{\Sigma(X - M_x)(Y - M_y)}{\sqrt{(\Sigma(X - M_x)^2)(\Sigma(Y - M_y)^2)}} = \frac{7144.024}{\sqrt{(7069.512)(17450.049)}} = 0.6432$$

This is a moderate positive correlation, which means there is a tendency for high X variable score go with high Y variable scores and vice-versa as reflected in the following figure:

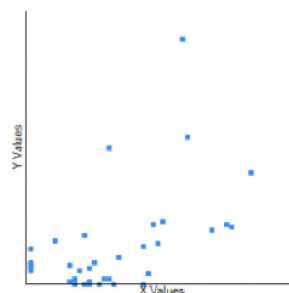


Fig. 5 Distribution of values for X and Y

[X: X Values; Y: Y Values; M_x : Mean of X Values; M_y : Mean of Y Values; $\bar{X} - M_x$ & $\bar{Y} - M_y$: Deviation scores; $(X - M_x)^2$ & $(Y - M_y)^2$: Deviation Squared; $(X - M_x)(Y - M_y)$: Product of Deviation Scores]

Hence it is clear from the statistical analysis that the correlation between (books & monographs) and (other documents) in case of students writing dissertations in Bengali is very weak i.e., consultation of more books does not go with the consultation of more other documents. But the correlation between (books & monographs) and (other documents) in case of students writing dissertations in English is moderately positive i.e., consultation of more books does go with the consultation of more other documents. Though not very strong, but this conclusion validates Hypothesis 3.

8. Interpretation

- Majority of students of Master of Arts in Education degree programme of University of Gour Banga, Malda prefer books and monographs as their mainstream documentary source of information. As they particularly depend on this type of source of information, there is every possibility that they might be missing out the opportunity to know and consult latest trends and research outputs. Hence, there remains a possibility of knowledge gap which might be reflected in their dissertation works and sometimes might not lead to a desired outcome or result.
- On an average female student consulted different types of documents more than their male counterparts.
- A low percentage of share of periodical

publications may be attributed to many probable reasons and unearthing of the true nature is beyond the scope of this limited time-bound work. In university set up in the context of West Bengal, students are rarely exposed to research work before final year/semester of master degree in any discipline. Naturally, books and monographs remain in their mind as possibly the only source of information. This particular mindset might be the reason behind low consultation of periodical publications. On the other hand, few other facts might have played role in a different capacity in this matter, such as availability of journals in the library which motivates users to browse through the issues. A poor collection in this regard might have contributed to the present state.

- Lack of motivational aspects on the part of teaching faculty to use different types of information sources might have played a significant role in limiting search beyond books and monographs.
- Frequent use of library makes patron aware of the existence of different sources of information. A lack of initiative on the part of students might have drawn the present picture.
- Even a library with poor periodical inventory may overcome this problem by a frequent organization of information literacy programme which makes students aware of an alternative way to get access to different types of publications such as open access. Infrequent or absence of such programmed on the part of a library might have played some role in the scenario.

In spite of the hurdles that might exist, a very healthy development has been noticed in the form of the steady rise of the use of periodical publications.

9. Recommendations

This exploratory, as well as investigative study, has created a space for some recommendations. These are in no way exclusive and complete in them but may be treated as parts of a whole. They are as follows.

- Faculties of the concerned department may give a glimpse of different documentary sources which carry the corpus of knowledge and motivate the student to grow a habit of looking beyond books and monograph to enrich themselves.
- Master-level courses may include a small chapter on sources of information with practical assignment to collect information on various sources available in the library.
- University library may try to enrich the collection of subscribed periodical publications both hard copy and electronic version if possible with campus-wide secure access to the electronic versions. So that both faculties, as well as students under faculty's supervision, will be able to consult various sources both online and offline.
- The central library may frame and organize information literacy programme for both newcomers and older folks frequently and make provisions for library orientation initiative periodically.

Conclusion

A research outcome is not an end in itself rather

a new insight which paves the way for fresh through, fresh look and new orientation towards a new problem to take up as a challenge to solve. Thus the cycle of research goes on like a spiral of knowledge creation, communication, utilization and again creation. The present exploratory study tried to investigate into the pattern of consultation of various sources of information by the students of Master of Arts in Education within a narrow time period. Naturally limited time frame has drawn several limitations in the study. The study did not try to measure motivational factors and expectations on the part of faculty members to inspire students to search beyond books and monographs. The study did not evaluate the quality of documents that were consulted by the students.

Nonetheless, with all its limitations the study paves the way for further research into how motivation and expectation on the part of faculty members play upon the document selection by students, what role the central library in playing to motivate students, quantitative and qualitative assessment of documents consulted by students for their dissertation work. To address all these issues requires investigation of greater magnitude which is beyond scope of present study.

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Information Use pattern of Libraries by students of Government colleges in Tamilnadu : A Study

Dr K. R. Senthilkumar

Abstract

Information usage studies are like part of library professionals from the twentieth century to identify the effective usage of information resources available in their libraries. This study investigates the information use pattern by the students of 22 Government College Libraries in Tamil Nadu. A well-structured questionnaire has been formulated and distributed among the students of Government colleges in Tamil Nadu to ascertain the information use pattern i.e. purpose of visit to the library, the purpose of use of information sources, access and use of e-journals, preferred file formats, and role of the library in promoting information resources. In total 700 questionnaires were distributed among the students of 22 government arts colleges in Tamil Nadu and 682 filled in questionnaires were received back. Findings recommend that guidance in the use of library resources and services is necessary and web searching and retrieval skills are organized at regular intervals to help students meet some of their information requirements.

Keywords:

Information Seeking Behaviour, Library Resources, ISB, Digital Environment and Govt. College, Documentary Delivery.

Introduction:

Information is power. It is a vital source for human beings for living a prosperous life on the earth. The process of information acquiring, using and implementing known as information-seeking behaviour. Information seeking behaviour (ISB) is a favourite subject of research by library and information scientists. ISB is an important part of user studies which studies the formal relationship between the use of information systems (Chavan, 2014) [1].

Wilson (2000) defines information seeking as 'the purposive seeking for information as a consequence of a need to satisfy some goal [2]. Elavazhagan and Udayakumar (2013) examined the exposure and



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measured the extent use of e-resources by the faculty members and research scholars of BITS, Pilani Hyderabad campus and confirmed that the e-resources are time-saving, easy to use and handle, more informative, preferred, flexible and effective [3].

2. Government Colleges in Tamilnadu: An Introduction

At present, out of the 686 arts and science colleges in Tamil Nadu, only 80 are government colleges where only a nominal amount is collected as the tuition fee. Today Govt. colleges is a unique "A" Grade Accredited by NAAC with CPE status which offers bachelor's general course in Science, Humanities and Business studies besides these courses it offers Postgraduate courses in Mathematics and Computer Application Sciences and many courses.

3. Review of Literature

Human Information Behavior **T. D. Wilson 2000**, this paper aims to review some of this research and to point to findings that enable the system designer to put the design process in the wider context of the user in the organization [2].

The document mainly focused studies of the period between 1948 and, say, 1965, were followed by attempts to explore information needs. One of the most rigorous of these was a major study carried out in 1972-73 in Baltimore, U.S.A. into the information needs of ordinary citizens (Warner, et al., 1973). In terms of overall research design and development of the research instrument, this study stands as a bench-mark for large-scale investigations of this kind. The study addressed the following issues:

1. What are the information needs of the urban community?
2. How are these information needs presently satisfied.
3. Could institutional forms be devised to better satisfy these needs

Some degree of integration of different models is now taking place. Wilson (Wilson, 1999) has proposed a problem-solving model as a way of integrating the research in the field and has also proposed a global model of the field (Wilson, 1997). The former perceives information seeking, searching and use as associated with the different stages of a goal-directed problem-solving process, the stages being: problem recognition, problem definition, problem resolution, and (where needed) solution statement. He suggests that both Kuhlthau's stages and Ellis's characteristics can be related to this model. The global model (Figure 1) of the field is, perhaps, worth showing here as it brings together some of the ideas that have been presented in this paper.

Dhyani (1974) conducted a survey of 100 readers at Rajasthan University library, Jaipur [4]. The study revealed that generally, the readers showed interest in using the library at the college level. However, only a few made use of the library at the university level.

The users who were surveyed did not reveal that there was general ignorance about the subject approach of the catalogue. The survey recommended that library instruction should be imparted to the students, reference services by competent staff should be given, every member should be given a library handbook, library

service should be properly organized, and documentation list including current awareness list should be circulated. A recent university library survey indicated that both librarians and the user community have only imperfect knowledge about each other; supply or provision of library service is made not according to the real demand, no effective demand exists for the major portions of the supplied resources and services, and both library resources and library personnel are not fully utilized or employed due to misallocation of resources and manpower.

A study measuring user satisfaction over the important services offered by the Central Library, Sambalpur University was undertaken. The services evaluation covered the document acquisition policy, document delivery service, technical processing and documentation service offered by the library. The user community included only staff members of the postgraduate teaching departments.

4. Objectives of the current study

The main objectives of the study are:

1. To explore the information-seeking behaviour of the students at Govt. Colleges in Tamilnadu
2. To determine the students level of satisfaction.
3. To find out the awareness and use of library resources by the students.
4. To study how far the faculty are library dependents.
5. To know the main purpose of information-seeking behaviour.

6. To ascertain users opinion regarding usefulness and adequacy of information sources and services.

5. Methodology

The Target in the study was students at Govt. Colleges in Tamilnadu. This study investigates the information use pattern by the students of 22 Government College Libraries in Tamilnadu. A well-structured questionnaire has been formulated and distributed among the students of Government colleges in Tamilnadu to ascertain the information use pattern i.e. purpose of visit to the library, the purpose of use of information sources, access and use of e-journals, preferred file formats, and role of the library in promoting information resources. In total 700 questionnaires were distributed among the students of 22 Government arts colleges in Tamilnadu and 682 filled in questionnaires were received back. The users with an overall response rate of 94%. 18 questionnaires were rejected due to incomplete information.

The data gained from the responses were analyzed, classified and tabulated to understand student's information-seeking behaviour and information needs by employing statistical methods.

6. Data Analysis

6.1 Type of Students

Questions like name, gender, and educational qualification were asked, undergraduate student out of 628 respondents, 471 (75%) were male and 157 (15%) were female, and Postgraduate student 36 (67%) were male and 18 (33%) were female.

Table 1 indicates 92% of respondents are undergraduate students followed by 8% Post Graduate students.

Type of Students	Undergraduate	Percentage	Post Graduate	Percentage
Male	471	75%	36	67%
Female	157	25%	18	33%
Total	628	100%	54	100%
Overall	628/682	92%	54/682	8%

Table 1: Type of Students

6. 2. Frequency of Library Visit

Respondents were asked whether they visit the library daily/weekly/monthly. As shown in Table 2 the majority of students 12% visit the library daily followed by 16% of students visit the library weekly while 3% come library monthly. It indicates that the library is being used by the students mostly.

Frequency	Respondents	Percentage
Daily	264	39%
Weekly	352	51%
Monthly	66	10%
Total	682	100%

Table 2: Frequency of Library visit

6.3 Purpose of Library Visit

In response to this table 3 indicates that 60% students borrowing study material, 20% uses reference material for completion of projects/ assignments, 4% uses the online databases/ journals for completing research work, 10% came to General Purpose and 6% have other purposes like reading newspaper and internet surfing to know new arrivals.

Purpose	Respondents	Percentage
Borrowing Study Material	409	60%
Reference Material	136	20%
Online databases/ Journals	28	4%
For General Purpose	68	10%
Newspaper / Internet	41	6%
Total	682	100%

Table 3: Purpose of library visit

6.4 Inspiration to make use of the Library

Table 4 reveals that the majority of respondents make use of the library for completion of their degrees i.e. 45%, 27% make use for the availability of materials, 15% for easy access of materials, 5% because of their reading habit and 8% of respondents for the atmosphere.

Makes to use the library	Respondents	Percentage
Completion of degree	307	45%
Availability of material	184	27%
Easy access to material	102	15%
Reading Habit	34	5%
Atmosphere of the library	55	8%
Total	682	100%

Table 4: Inspiration to make use of the Library

6.5 Time spend by respondents in the library

Table 5 represents the majority of respondents spending time 1 to 2 hours in the library i.e. 35%, 25% spend 15 to 30 minutes in the library. 30% of respondents spend less than 15 minutes and the least number of respondents spends more than 2 hours.

Time	Respondents	Percentage
1 to 2 hours	238	35%
15 to 30 minutes	171	25%
Less than 15 minutes	205	30%
2 hours or more	68	10%

Table 5: Time spent by respondents in the library

6.6 Methods of searching for information

In response of methods of information seeking table 6 represents that, subject experts library and internet are the most reliable sources for seeking their information, while friends/colleagues are less used by students for seeking their information.

Sources	Respondents	Percentage
Subject experts	307	45%
College Library	205	30%
Internet	102	15%
Friends/ Colleagues	68	10%
Total	682	100%

Table 6: Methods of information seeking

6.7 Satisfaction of user in library service

Table 7 indicates that borrowing facility, reference books, journals/project reports are being utilized mostly while e-resources are used marginally. It shows that there is a necessity to create awareness among users to use e-resources.

Sources	V.Good	Good	Fair	Poor
Borrowing Facility	460	150	50	22
Reference Service (Current Awareness Service)	40	120	460	62

Journals & Reference Books	137	200	235	110
Project Reports	80	188	221	193
Issue /Return	250	301	78	53
Indexing services	45	100	167	370
Abstracting Services	60	145	190	287
Translation Services	14	20	55	593

Table 7: Use of Library Sources & Services

6.8 Purpose of using information

Table 8 shows that in the response of purpose seeking information that to keep up-to-date, Completion of degrees, for career development and projects/assignments by the respondents. Problem-solving and general awareness are other purposes of seeking information which have less preference.

Purpose	Respondents	Percentage
To keep upto date	464	68%
Completion of degree	477	70%
For career development	375	55%
Preparing Project reports/Assignments	273	40%
General awareness	239	35%
Solving the problem	171	25%

Table 8 : Purpose of Seeking Information

6.9 Problems faced in using Library

Table 9 indicates that during library visit 25% respondents found that there is lack of latest information material according to their syllabus, 40% Aware but don't know how to use of e-

resources, 15% Insufficient Computer Systems for accessing e-resources, 10% respondents are facing the problem that opening hours are not sufficient, 5% are lack of knowledge for how to search in OPAC and 2% Comments that library staff are not helpful, 3% of respondents do not have time. Based on findings a collection development policy & users awareness programme are necessary for maximum utilization of the library.

Problems	Respondents	Percentage
Lack of latest information material	171	25%
Aware but don't know how to use of e-resources	273	40%
Insufficient Computer Systems	102	15%
Opening hours are not sufficient	68	10%
Lack of knowledge for how to search in OPAC	34	5%
Library staff not supportive	14	2%
Don't have time	20	3%

Table 9: Problems faced in using Library

7. Findings & Suggestions

In this study 682 respondents of Govt. Colleges in Tamilnadu were surveyed which investigates that library services are being utilized. Students use a variety of information sources for their academic purposes. Books and the internet are

considered mostly. Students perceived that library plays an effective role in meeting their needs and one of our main findings was that the use of e resources within institutions is extremely varied, and often the most innovative uses and users are not supported centrally. Indeed, in many institutions, there is a lack of communication between IT service departments and other personnel who are responsible for the pedagogical aspects of e learning. It was also noted that there was little awareness of e-resources available in the library. Majority of the respondents are accessing the internet using mobile phones but access the internet in the library and internet café.

8. Suggestions

In the light of findings of the study following suggestions are made to improve the effectiveness & quality of the library and improve the user satisfaction level.

1. Govt. Colleges in Tamilnadu library needs to promote awareness and use of electronic information resources.
2. The library needs to increase general & reference collections to fill the needs of the students.
3. More number of reference sources in different languages should be included in the collection of the library.
4. Need for initial orientation workshops and ongoing seminars for students to train them in using resources so that the utilization of resources and services is maximized.
5. In the library, computer networks should be developed and access of e-resources should be available.

6. Need to concentrate on proper book shelving and its preservation.
7. Document Delivery services should be increased.

Conclusion

The issue of quality in higher education has become more paramount now and to achieve this goal for a library to develop itself with a rich information collection and build the best collection of electronic resources and information services for its users. We are living in a digital world. The evidence is everywhere. Some of these outstanding and valuable resources are freely available on the internet' (Singh, 2003).[5]

E-resource use is a high priority for institutions; there is one main problem that is holding back the wider utilization of these technologies. Firstly, within institutions, uneven skill sets of personnel, and a lack of internal dissemination of e-resource use findings means that the adoption of these resources, which might have already been trialled in one subject area, is slow to spread to other areas.

The fast growth of the information and communication technology and electronic resources has changed the traditional method of research, storage, retrieval and communication of scholarly information. It is concluded that the Government college libraries need to be upgraded with more e-resources and digital infrastructure

to meet the increasing information requirements of the readers.

The study could find the limitations pursued by the users in the Government College in Tamilnadu towards information access. Such as lack of knowledge in computer handling browsing the e-journals, limitations of internet access speed the attitude of library staff and power fluctuations.

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Role of different organizations towards developing librarianship in Bangladesh

Dr Md. Azizur Rahman, Anita Helen & Dr Md. Ajimuddin Sk

Abstract

Librarianship is a noble profession. The main function of the people of this profession is to provide knowledge and information to the researchers, educationists, teachers, students, authors, industrialist, policy maker in a particular and in general to the conscious citizens of the community. To meet the demand for such classes of people, library personnel should be skilled and well trained. To achieve the desired status and improve the standard of library services, active participation of the professional association is essential. A professional association is learned professional organizations of intellectual people/librarian who keeps protecting and promoting common interests of better professional status and desirable library services. To give efficient service to the users, the library professional must be highly educated. In the field of LIS education by four public universities, there are also some private universities offering education in this ground side by side. These universities have created the highest number of professionals in this field. This article focuses on the impact of different organizations and institutions on developing librarianship in Bangladesh.

Keywords:

Librarianship, Professional Association, Bangladesh, LIS education.

Introduction:

Education is considered as an important factor in the overall development of society. It contributes to the promotion of material resources through the development of trained staff and specialized manpower. It is likewise an operation aimed at preparing the individual for active participation in society that is as a citizen who can be active at all levels, not merely for production purpose. Librarianship is the discipline and profession that is concerned with helping individuals, obtain reliable information to increase their knowledge in all spheres of their lives from the cumulated information store of mankind. In

addition to the professional skills mentioned, the librarian of the information age must be equipped with a wide range of personal and transferable skills to manage the changing environment in which h/s works.

Library development was started with the slogan that the country will be made by people and to create learned people, there must be a library which was started by a professional library association, different organization and personal initiative of some reported persons. No library legislation act was passed during the colonial period of British and Pakistan and the early period of Bangladesh. For the development of any profession in any country, an active and vigorous professional association is vital. Therefore, the idea of establishment of Pakistan Library Association was generated in the mind of the handful professional librarian in 1954. Thus, Pakistan Library Association (PLA) came into being in July 1956.

After independence Qudrat-e-khuda Education Commission was framed by the government to reorganize the education system of the country. In this commission's report, special emphasis was given regarding library development of the country. For the proper running of the libraries, a competent professional librarian is needed so that the library can help to create real educated personal. To ascertain efficient service, the library professional must be educated [1].

2. Objective of the Study:

The main objectives of the study are given below:

2.1 To know the contribution of different

organizations for the development of librarianship in Bangladesh.

2.2 To identify the professional education facilities in different institutions (public and private universities) of Bangladesh.

3. Methodology

The study is based on the historical method and interview method with a prominent library professional regarding the development of Librarianship in Bangladesh.

4. Background:

In the later part of the 19th century, the library movement was started with the establishment of some public libraries in Bengal. But no idea of librarianship was developed. None thought of the formation of an association in the country for the improvement of libraries and their services. To achieve the desired status and improve the standard of library services, the active role of a professional association is very important. In this context we can say that the development of librarianship in Bangladesh may be categorized as follows:

4.1. Professional Association

Library and Information Associations play a vital role in the development of the library and Information Science profession and socio-economic transformation of communities by ensuring that Information institutions render quality of Information services. By organizing librarians and information professionals, library associations create a forum for meeting, exchange of views, sharing and solving technical problems and learning from each other which are important if

similar problems and challenges are to be collectively addressed.

Professional Associations are closely associated with the growth of librarianship as a profession. On the other hand, the growth of librarianship depends on the development of professional associations. Library movement is made up of the efforts of people over the years. In the later part of the 19th century, the library movement was started with the establishment of some public libraries in Bengal. But no idea of librarianship was developed. None thought of the formation of an association in the country for the improvement of libraries and their services.

In December 1924, all India library conference discussed the establishment of library association in every province of India and the delegates from Bengal got the resolution carried and were determined to start library Association in their province. Accordingly, the All Bengal Library Association was formally formed in 1925. The name of the Association was changed from all Bengal Library Association to Bengal Library Association.

In 1947, the province of East Bengal became the eastern part of Pakistan due to the partition of the Indian subcontinent into India and Pakistan. The condition of the professional Association is very important for the success of the library movement [2]. The steps which have been taken in Bangladesh for developing librarianship is noted below:

4.1.1 Role of Library Association of Bangladesh (LAB)

The Library Association of Bangladesh (LAB)

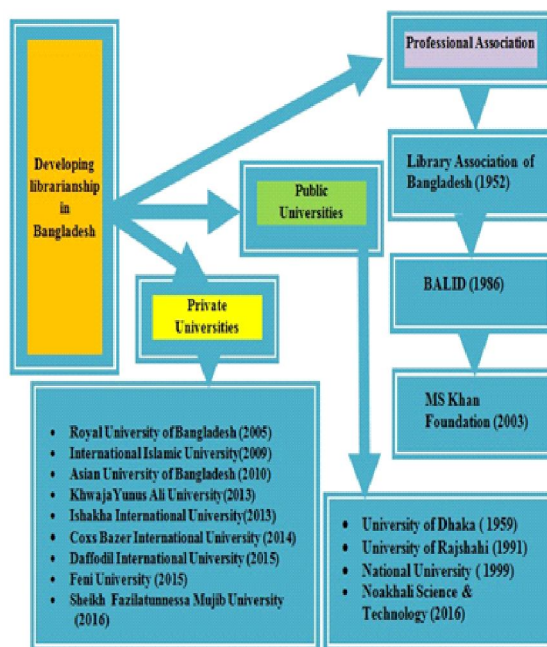


Fig.-4.1: Pattern of Professional Association and Library and Information Science Education in Bangladesh by different University and Organization

was founded in 1956 at Dhaka. These are the contributions of the LAB towards education and training of manpower in this area of this country. All these courses are instituted in library Training Institute, established by the Library Association of Bangladesh with the help and recognition of the government of Bangladesh. Many mid-level professionals have been coming out from this Institute. The Institute is housed at Nilkhet High School Building and all activities of the Association have been carried out from the same place for a long time.

Its mission is “to provide leadership for the development, promotion and improvement of library and information services and the profession of librarianship to enhance learning and ensure access to information for all.”

LAB occasionally arranges different seminars in local, regional, national, international level. It can be noted that LAB is representative of commonwealth Library Association, IFLA etc. LAB is now working as a representative in different bodies of Bangladesh in framing to recommendation national education policy, library policy, book policy, pay commission etc. to solve the various problems of the LIS professions.

The problems of the professional are solved with the discussion of high official as well as Ministry. Training courses are arranged in addition to educational courses with the help of highly qualified professionals to increase the efficiency of the library professional. Training courses on modern library management for government, Non-Government and other institutional libraries professional with the economic help of the National UNESCO Commission and LAB. Very recently training courses on information technology has been arranged for the librarian to use information technology in the library.

In respects, of publication LAB published International Standard Journal **Eastern librarian** since 1966. It also started Publishing popular Bangla Newsletter 'Upattay' and **proceeding** in the occasion of the different seminar, inaugural ceremony, library day, annual general meeting, Directory of Library and Information Science etc.

LAB is a professional national body for promoting library-related activities in Bangladesh. There are many limitations and problems, which impedes the gradual development of the LAB. Some recommendation smooth developments of LAB are:

- The rank and status of librarians and information professionals should take necessary initiatives as far as possible. Because the proper development of the LAB largely depends on the professional developments of library and information profession.
- LAB should organize national and international seminars, conferences, symposiums and short training and so on. So that the members of the LAB can communicate with each other and enriched them with professional development.
- LAB should make good relation with different Library Association of the world (e.g. ALA, LA, SLA) for steam lining the professional development.
- The management of LAB must be decisive.
- LAB should open the door to all who are interested to join LAB as a patron.

4.1.2 Role of Bangladesh Association of Librarians Information Scientists and Document lists (BALID)

BALID was established on 23 January 1986 with a good initiative of the young LIS professionals from Bangladesh. BALID realized that the free flow of information, as well as intellectual freedom, is the key components for the overall development of society. The BALID is devoted to modernizing the LIS profession as well as professionals in Bangladesh.

BALID organize some seminar, symposium, workshop and training programme for the librarian, Information Scientist and other LIS professionals. They publish Professional

periodical Bulletin 'Informatics'. They also provide some scholarship for the meritorious and poor students and awards are also given for the important contribution in this field. There are some proposals for the smooth developments of BALID are:

- Modernization of library, information and documentation centres in all sections and corner of the country.
- Improve the status of LIS professionals as well as the development of the workplace.
- Uphold professional interest and welfare of the members.
- Enhance the cooperation among the libraries and information centres and build relations with similar institutions/organizations in relevant issues.
- Establishment of an integrated national information system.

4.1.3 Role of MS Khan Foundation:

As a pioneer of library education and profession victory awarded to MS Khan. To keep the memory alive of the contribution of MS Khan, the MS Khan Foundation was founded in December 2003 to arrange a workshop, seminar, new research activities etc. The scholarship is also given for special contribution of library professional in this field.

4.2 Institutional Development:

Institutional development means academic activities in LIS courses of Bangladesh. Library science education was started in Bangladesh before independence. Presently four public and ten private universities are conducting LIS course

successfully in Bangladesh. In this context we can discuss the institutional development LIS course in Bangladesh:

4.2.1 Dhaka University (DU): DU is the prominent and the oldest university in Bangladesh which was established on 1st July 1921. The inception of Library Science a department in this university began with the name "Department of Library Science" in the year of 1959 and the session 1959-60 a one-year Post-Graduate Diploma (PGD) course in library science was started based on the course curriculum of London University [3]. The department is conducting different types of courses are given below :

- ❖ BA (Hons) Courses (4 years)
- ❖ MA Courses (1 year)
- ❖ MA (Evening) (2 years)
- ❖ M.Phil (2 years)
- ❖ Ph.D (3-5 years)

4.2.2 University of Rajshahi (RU): RU is the second-largest public university in Bangladesh which was established in 1953. In the year of 1991 Post Graduate Diploma (PGD) course in Library Science was started. The department is conducting different types of courses are given below:

- ❖ BA (Hons) Courses (4 years)
- ❖ PGD Courses (1 year)
- ❖ MA Courses (1 year)
- ❖ MA (Evening) (2 years)
- ❖ M.Phil (2 years)
- ❖ Ph.D (3-5 years)

4.2.3 National University (NU): National University of Bangladesh was established in 1992. At Present there are on campus and 32 Institute are offering one year Post Graduate Diploma course in LIS education under the National University from the year of 1999. The department is conducting different types of courses are given below:

- ❖ BA (Hons) Courses (4 years)
- ❖ BA(Pass) Courses (3 years)
- ❖ PGD Courses (1 year)
- ❖ MA Courses (1year)
- ❖ MAS Courses (2 years)
- ❖ M.Phill (2 years)
- ❖ Ph.D (3-5 years)

4.2.4 Noakhali Science and Technology University (NSTU): Noakhali Science and Technology University was established in 2004. The Institute of Information Sciences (IIS) has been established under Noakhali Science and Technology University Act 2001, Section 41 as a constituent Institute with a separate Board of Governors. The Institute is provided different types of courses are below:

- ❖ BA (Hons) Courses (4 years)
- ❖ PGD Courses (1 year)

4.2.5 Private University of Bangladesh

Private universities are managed under the private university Act 1992 [4]. There are 95 private universities in Bangladesh. There are seven private universities (Cox's Bazar International University (CBIU), Daffodil International University (DIU), Feni University

(FU), Ishakha International University of Bangladesh (IIUB), International Islamic University Chittagong (IIUC), Khwaja Yunus Ali University (KYAU), Sheikh Fazilatunnesa Mujib University (SFMU) offering PGD in LIS courses in Bangladesh. Side by side other two universities started BA(Hons) courses East West University (EWU), Khwaja Yunus Ali University (KYAU) and other two universities started MA courses e.g Asian University of Bangladesh (AUB), Royal University of Bangladesh (RUB) [5].

Conclusion

Finally, we can say that professional association is trying to improve the library profession by rendering education and suggestion to the government for the legitimate demand of library professionals of Bangladesh. A commission name National Commission for Librarianship should be formed for contributing progressive library education in all stages like government, non-government institutions engaged in LIS education and including library education in the syllabuses of all stage of education considering social condition so that appropriate LIS education can speed throughout Bangladesh. This commission will work as a role model for library professional in Bangladesh.

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Role of Peer Review in Scholarly Communication: Open Access vs. Closed Access Journals

Dr Swarnali Chatterjee & Dr Rajesh Das

Abstract

The purpose of this paper is to prove that open access peer-reviewed journals have maintained the level of quality like closed access journals. The value of open access peer reviewed journals is not less than closed access journals. The paper provides an analysis of both closed access and open access journals on three different disciplines. The analysis has contained 50 journal titles from each disciplines and its' graphical representation on their statistical data. The study has found several figures accordingly different peer-review methods from both open access and close access journals. The result indicates that the peer review methods are almost same of both sites. Sometimes the peer review methods are not mentioned but the peer review process are given on those journals sites. Finally it found that open access journals are very much important for R & D activities and other activities like closed access journals. The paper draws the scalability of open access peer reviewed journals and how much these journals are helpful for scholarly communications in R & D activities.

Keywords

Scholarly communications, Open Access journals, Closed access journals, Peer Review, E-journals, Online journals

Introduction:

In ancient times, access to education and knowledge was limited among only a few privileged members/classes of the society. The available knowledge was recorded mostly in the form of hand-written manuscripts using various media. Accordingly, there was very little concern for the quality of these endeavours, as these were highly selective in nature [1]. But with the advent of Renaissance in Europe and spread of democratic norms during the medieval times, there came an upsurge in demand for education.

Technological developments like Gutenberg's invention of movable printing press helped to satisfy this increased demand through publication of large number of copies of each and every document. Proliferation of numbers also brought with it the menace of poor quality of knowledge objects like books, pamphlets, journals, etc. There came the 'Peer Review' system for ensuring the quality of these objects. The second half of the past century experienced another phenomenon called 'Information Explosion', mainly engineered by unprecedented growth in the Information and Communication Technologies [2]. Internet has now affected all spheres of the human activity – education and research, communication, business, industry, leisure and what not. Our civilization has entered into an 'e-era' (electronic-era). But it has mainly affected our access to information and knowledge, transforming the hitherto isolated communities into a global community. Thus in the knowledge sector we have products and services like, e-books, e-journals, e-theses, e-mail, etc. Internet has proved to be a boon for not only those who wish to use it to their profit-making purposes, but also to those who intend to make this world a more equitable place for all by sharing their expertise, knowledge, and the fruits of development. The latter group has been christened as the 'Open Access/Source Movement'. In the arena of scholarly journal publishing of late we are experiencing 'Open Access e-journals' and their number is on the rise [3]. But this has again raised the concern for quality of such journals in the mind of academics. For many, something which is free and open is likely to have some sort of compromise with

quality of its content. They rather favour the closed access journals for dissemination of their research findings [4].

This paper has made an endeavour to test the above contention of academics. Through a comparison of a sample set of online journals of both closed access and open access categories belonging to three different subject fields, viz., Library and Information Science (LIS), Chemistry, and Medicine, the work has tried to evaluate the peer-review system followed by these journals as a measure of quality assurance. Belying the fear prevalent among the academics, the findings of the study reveal that open access journals maintain similar level of quality through the peer-review system like closed access (i.e., subscription-based) journals.

The term "scholarly communication" is often used as shorthand for peer-reviewed publishing, traditionally the primary way a discipline advances. The most common method of scholarly communication is by writing up the findings of research in to an article to be published in a scholarly journal; however, there are many other methods, such as publishing a book, book chapter, conference paper, reviews, preprints and working papers, encyclopaedias, dictionaries, annotated content, data, professional and scholarly hubs and - particularly in the arts and humanities - multimedia formats such as sound and video recordings etc [5].

This paper has mainly focused on scholarly journals (a method of scholarly communication) in both online closed access and open access [6].

Most of the academic community still thinks that as closed access journals are available

subscription basis and they are maintained level of quality and good for research than open access journals. The aim of this paper is to show the level of quality of open access journals is same like closed access journals.

2 Literature Review

Boyd E Evan has worked on Scholarly Communications and defined the Scholarly Communications as king content as king maker. He attempted to focus on history and development Scholarly Communications and also discuss in his paper about content of the Scholarly Communications [7].

Will Gregg and others have studied a comprehensive literature review of scholarly communications and it's metadata. This literature review is to identify the challenges, opportunities and gaps in knowledge with regarded to use of metadata in scholarly communications [8].

Nancy Portika has focused on the roll and jobs in the open research scholarly communications environment. The paper has focused on how library staffs and adopted to scholarly communication development and consequentially enabled them to offer efficient services to their users [9].

Williamson and Minter have described in their paper about the scholarly communications services in PubMed. This paper focused on growth of PubMed center and Public access in the current scholarly communications landscape. The differing scopes of PubMed Center and MEDLINE will likely continue to affect their overlap; however, quality controll exists in the maintenance and facilitation of both resources, and funding from major grantors is a major component of quality assurance in PubMed Center [10].

Roure has explained the future of scholarly communications in his paper. He asked about scholarly articles and how march those articles are fit for research. The emerging paradigm of social machines provided a lens on to future development in scholarship and scholarly collaboration [11].

3. Statement of the Problem

Most of the academic community thinks that closed access journals maintain the level of quality and good for research than open access journals. The problem is whether the open access journals maintain the quality of publications as closed access journals? If so, then what is the level of quality of an open access journal compaired to closed access journals?

4. Objective of the Study

The objective of this study is to show the level of quality of open access journals compaired to its closed access counterpart.

5. Methodology

There are different steps involved for the methodology of the work. A sample of three different disciplines i.e Library & information science, Chemistry, Medicine and Desntristy have taken and 50 titles of journals from each discipline are chosen on the basis of systematic sampling method (Kumar, 1992). Closed access journals of Library & Information Science, are chosen from Science Direct (<http://www.sciencedirect.com/>), Emerald Insight (<http://www.emeraldinsight.com/>). The other two disciplines (i.e Chemistry and Medicine & Dentristy) have chosen from Science Direct (<http://www.sciencedirect.com/>).

In the case of open access journals the titles of those subject including LIS have chosen from DOAJ (Directory of Open Access Journals)

(<http://www.doaj.org/>). Selection of 50 journals titles from each subject on the basis of systematic sampling method have taken like closed access journals.

Statistical data analysis of 50 titles from each discipline of both closed access and open access sites are done by different peer-review methods. Then it has drawn graphical representation of peer-review methods of closed access as well as open access journals.

6. Analysis

Closed Access Journals: The following table has shown the journals' details and different methods of peer-review process as on dated 11th August 2018.

Sl. No.	Subject	Online Journal Websites details		Types of Peer Review				
		URL	Total No. of Journals	No. of Journals taken (sample)	Single Blind	Double Blind	Open Peer Review	Not mentioned
1	LIS	http://www.sciencedirect.com	25	22	09	07	-	06
		http://www.emerald.com	31	28	03	22	-	03
		Total	56	50	12	29	-	09
2	Chemistry	http://www.sciencedirect.com	210	50	18	19	-	13
3	Medicine & Dentistry	http://www.sciencedirect.com	1770	50	12	32	-	06

Table-1: Closed access journal websites with different peer review methods

6.1 Graphical Representation of the subject LIS by different peer review methods closed access journals

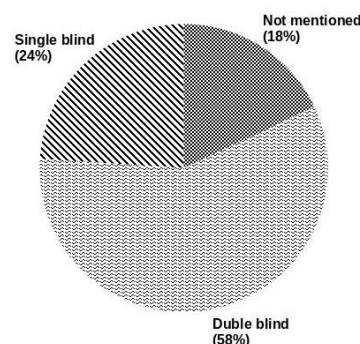


Fig.-1: Pie diagram of the subject "Library & Information Science" different peer review methods

The Figure-1 shows a pie diagram of different peer review methods of closed access journals of the subject LIS. We can identify the different methods by different shades. Here, the area of "Double blind" is highest follows by "Single blind" and "Not mentioned". There is no area identified for "Open peer review" as the value of this is 0.

6.2 Graphical Representation of the subject Chemistry by different peer review methods closed access journals

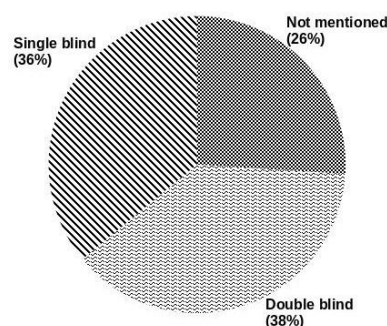


Fig.-2: Pie diagram of the subject "Chemistry" different peer review methods

The Figure-2 shows a pie diagram of different peer review methods of closed access journals of the subject Chemistry. Here, the area of “Double blind” is highest than others. The percentage of this method is 38% follows by “Single Blind” (36%) and “Not mentioned” (26%).

6.3 Graphical Representation of the subject “Medicine & Dentistry” by different peer review methods closed access journals

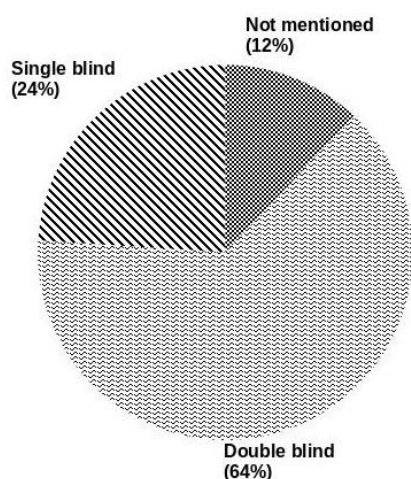


Fig.-3: Pie diagram of the subject “Medicine” different peer review methods

The Figure-3 shows peer review methods of closed access journals of the subject Medicine & Dentistry. Here also “Double Blind” system is followed by most of the publishers (64%) follows by “Single blind” (24%) and “Not mentioned” got the third position (12%) as usual.

6.4 Open Access Journals: The details of open access journals are listed below with different peer review process which has been surveyed on 14th August 2018.

S. No.	Subjects	Online Journal Websites details			Types of Peer Review		
		URL	Total No. of Journals	No. of Journals taken (sample)	Single Blind	Double Blind	Open Peer Review
1.	LIS	http://www.d oaj.org	147	50	14	24	03
2.	Chemistry	http://www.d oaj.org	129	50	30	06	-
3.	Medicine	http://www.d oaj.org	761	50	25	14	02

Table-2: Open access journal websites with different peer review methods

6.5 Graphical Representation of the subject “Library & Information Science” by different peer review methods for open access journals

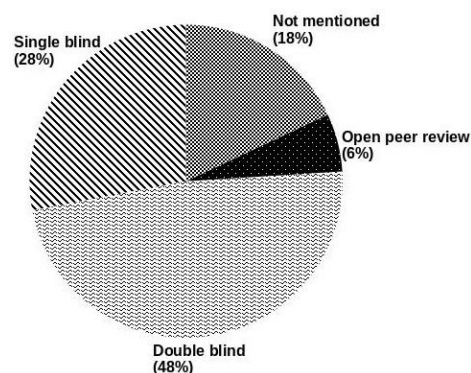


Fig.-4: Pie diagram of the subject “Library & Information Science” different peer review methods

The Figure-4 shows that in an open access system the pattern is same. Method of “Double blind” peer review method got highest value (48%) follows by “Single Blind” system (28%) and 18% didn’t mention their peer review method.

6.6 Graphical Representation of the subject “Chemistry” by different peer review methods for open access journals

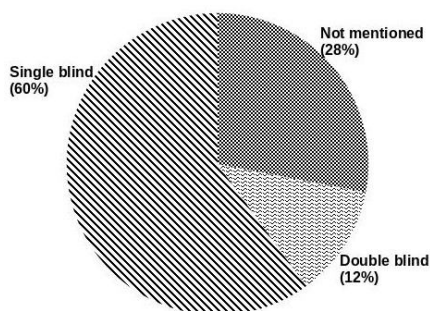


Fig.-5: Pie diagram of the subject “Chemistry” different peer review methods

The Figure-5 shows that in an open access system the pattern is little different for Chemistry. Method of “single blind” peer review method got highest value (60%) follows by “Not mentioned” system (28%) and only 12% follows the “Double blind peer review method.

6.7 Graphical Representation of the subject “Medicine” by different peer review methods for open access journals

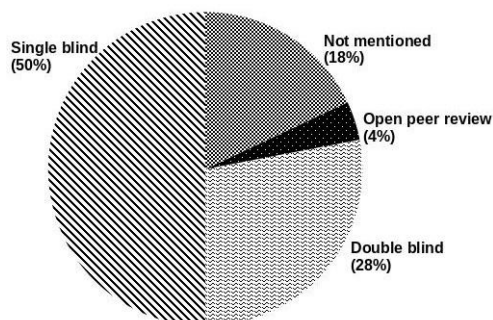


Fig.-6: Pie diagram of the subject “Medicine” different peer review methods

The Figure-6 peer review methods of open access journals for “Medicine”. Here, the area of “Single blind” is highest (50%) than others. “Double blind” (28%) follows by “Not mentioned” (18%). Interestingly a smallest area follows the “Open peer review” method (4%).

6.8 Closed Access Journals and Open Access Journals for (Library & Information Science, Chemistry and Medicine)

S l. No.	Subjects	Online Journal Websites details		Types / Methods pf Peer Review		
		URL	No. of Journals taken (sample)	Single blind	Open Peer Review	Not mentioned
1.	Closed access	http://www.sciencedirect.com http://www.emerald.com	150	42	80	- 28
2.	Open access	http://www.doaj.org	150	69	44	05 32

Table-3: Closed access and open access journal websites with different peer review method

In closed access medical science is known as Medicine & Dentistry

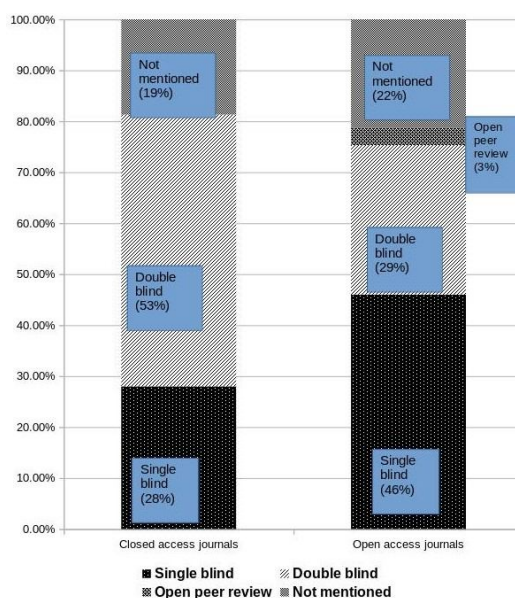


Fig.-7: Compound Bar Diagram for displaying with different categories

The Figure-7 shows a compound bar diagram of different peer review methods of closed access and open access journals of the all disciplines. There are two bars – i) closed access journals, ii) open access journals. In closed access journals, the highest area is “Double blind” (53%), next is “Single blind” (28%) and third is “Not mentioned” (19%). The “Open peer review” is no value. In case of open access journals, highest area is “Single blind” (46%). The second placed is “Double blind” (29%) and third is “Not mentioned” (22%). The “Open peer review” has occupies 3% of the total area.

7. Results

In the closed journals, it is taken 50 journals of librarian and information science, which have taken from five closed access websites (Science direct, Emerald Insight) and the results of different peer-review methods i.e. “Single blind”, “Double

blind”, “Open peer-review” and “Not mentioned” are 12, 29, 0 and 09 respectively.

In chemistry subject from Science Direct, it is taken 50 journals in which I have found different peer-review methods i.e. Single blind, Double blind, Open peer-review are 18, 19 and 0 respectively. The value, which I have got 13, is for “Not mentioned” the peer-review methods clearly.

In medicine, it has also found the different peer-review methods i.e Single blind, Double blind, Open peer-review are 12, 32 and 0 respectively from 50 journals. The value for “Not mentioned” the peer-review methods clearly is 06.

In case of open access journals, it is taken 50 journals from each subject (LIS, Chemistry, Medicine) from DOAJ.

In LIS, it has found the value of different peer-review methods i.e. Single blind, Double blind, Open peer-review and those are 14, 24, 03 respectively. 9 items found without mentioning the peer-review method. The open peer-review method is found in this subject for the first time.

In Chemistry, the value of Single blind, Double blind and Open peer-review are 30, 06, 0 respectively. There are 14 items found without mentioning the peer-review method.

In Medicine, it has found the value of Single blind; Double blind, Open peer-review and those are 25, 14, 02 respectively. There are 09 items found without mentioning the peer-review method.

In the Figure-7 there is a comparative Compound Bar diagram of closed access and Open access journals and it shows that different

types of peer-review with their value of closed access and Open access journals. There is no far difference between closed access and open access journals. In closed access journals, the value of Single blind, Double blind, Open peer-review are 42(28%), 80(53%) and 0(0%) respectively. In open access journals, the value of Single blind, Double blind, Open peer-review are 69(46%), 44(29%) and 5(3%) respectively. In case of both, 28 and 32 journals are not mentioned the peer-review process clearly.

Now, from those above discussion it may conclude that, both open access and closed access journals till maintain the same peer-review process to enhance their quality. So there is no doubt that open access journals are very much important for R & D activities and other activities like closed access journals.

Conclusion

The purpose of the paper is to describe the importance of open access journals in R&D and other field by a critical analysis. This study proves that open access journals enhance the level of quality by the different types of peer-reviewed methods. Those who are not associated with universities and the higher academic institutes (mainly in rich countries), can access the open access peer-reviewed journals for their current research. There is a belief that by making research easier to access and open will make research itself more efficient and increase the total research output.

The library is a non-profit making organization. So, librarians can enrich their collection by open access resources. So, it is the responsibility of every librarian to promote open access movement in our society with free of cost. At

last but not the least, the librarians should well equip with modern technology for providing the web-based services of open access resources. If it is happened properly then the revolution will come very soon.

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Scientometric Analysis of Astrophysics Research Output in India: Study Based on Web of Science Database

Dr G. Ulaganathan

Abstract

This study analyzes the Astrophysics research output in India from the year 1989-2016. The data was downloaded from the web of science database which was maintained by Thomson Reuters. The findings of the study revealed that among the 42418 authors, "Banerjee S" has published 1265(7.4%) of articles and it is the highest publications with first-rank position and 2673 TLCS and 40735 TGCS scores measured. Next to the author of "Kumar A" and "Weber M" has occupied second and third position respectively 971 and 668 articles.

Keywords

Scientometrics, Astrophysics, Web of Science, Histcite

Introduction:

While astronomy is one of the oldest and very important sciences, theoretical astrophysics started with Isaac Newton. Before Newton, astronomers explained the motions of heavenly bodies using complex mathematical models without a physical basis. Newton illustrated that a single theory simultaneously describes the orbits of moons and planets in the universe and the path of a cannonball on Earth. This added to the body of evidence for the (then) remarkable inference that the heavens and Earth are subject to similar physical laws. [Related: How Isaac Newton Changed the World]

Perhaps what most entirely break up Newton's model from previous ones is that it is extrapolating as well as evocative. Based on aberrations in the Newtonian orbit of Uranus, astronomers predicted the place of a new planet, which studied and named Neptune. Being predictive as well as descriptive is the sign of a mature science, and astrophysics is in this category.



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Ulaganathan et al (2017) have explained the exponential growth rate for astrophysics research output in India during the period 1989-2016. The highest growth rate(1.18%) was in the year 1995 with 341 publications [1]. The average exponential growth rate is 0.961 for the study period. **Tripathi et al. (2016)** have analysed the publication output of India on cereal crops as reflected by its exposure in the Scopus database for the period of 1965-2010 [2]. The analysis shows that the maximum number of papers (40%) published on rice, followed by wheat (29%) agricultural universities and institutions. **Senthilkumar et al. (2016)** have described the bibliometric analysis of the journal “Journal of Emerging Market Finance” 2002-2013 [3]. During the study period, the journal has published 149 articles and volume number 3 shows the highest number of total articles 17 published. The maximum numbers of contributions are by joint authors 97(65.10%) articles while single authors contributed the 52 (34.90%) articles. The study concludes that the majority of the contributors preferred journals as the source of information, which occupied the top position with the highest number of citations. **Soumen Teli et al.(2016)** have empirically recognized a relationship between the number of citations given by the articles and the number of articles recover from the Web of Science database in some areas of astrophysics. In all, eighteen search terms selected from some domains of astrophysics using systematic sampling method [4]. Four fundamental variables associated with each search term considered for this study. The basis of these four fundamental variables, five new variables are defined as follows, the average number of citations received

by all retrieved articles; the average number of citations received by top ten cited articles; Citation Gain; Citation Gain Index and Citation Gain Index per unit Age or Temporary Citation Gain Index. It has scrutinized that citation gain is directly proportional to the number of retrievals. The Temporary Citation Gain Index showed rectangular hyperbolic pattern with Publication age. **Dhawan et al. (2016)** have analyzed India's research output in rare earth on a series of scientometric indicators. From India a total of 11,838 publications in the area of rare earth in 10 years for the period of 2005-14 [5]. The paper profiles 15 most productive countries in rare earth, 20 most productive organizations and 20 most productive authors on a series of indicators including global publications share global citation share, average productivity, citations per paper, h-index, and share of international collaborative papers during 2005-14. The paper also identifies the top 20 most productive journals reporting India's research in rare-earth for the period of 2005-14. **Rajesh Kumar Lohiya et al.(2016)** have to afford innovative and effective solutions to a wide range of environmental problems in the country [6]. This study attempts to analyze the research publications of CSIRNEERI, for 25 years between 1989 and 2013. The research illustrates that the majority of scientists preferred to publish research papers in joint authorship.

2. Objectives:

1. To calculate the year-wise distribution of astrophysics research output in India.
2. To analysis document wise astrophysics research output in India.

3. To calculate Top 25 Prolific Authors in astrophysics research output in India

4. To identify the Top 25 Country wise contribution in astrophysics research output in India

3. Methodology

The study is mainly exploratory in identifying the astrophysics research output in India and analytical with suitable statistical tools application in strengthening the empirical validity. The required data was downloaded on 5th May 2017 (11.45 am) from the Web of Science [7] database published online by Thomson Reuters, (Institute for Scientific Information, Philadelphia), USA. A total of 17046 records are downloaded and analyzed by using the HistCite software application”.

4. Data Analysis

4.1 Year Wise Distribution of Astrophysics Research Output in India:

S.No	Publication Year	Recs.	Records %	Cumulative Total	Cumulative %
1	1989	358	2.10	358	2.10
2	1990	416	2.44	774	4.54
3	1991	420	2.46	1194	7.00
4	1992	389	2.28	1583	9.28
5	1993	434	2.55	2017	11.83
6	1994	403	2.36	2420	14.19
7	1995	341	2.00	2761	16.19
8	1996	370	2.17	3131	18.36
9	1997	437	2.56	3568	20.92
10	1998	417	2.45	3985	23.37
11	1999	412	2.42	4397	25.79
12	2000	447	2.62	4844	28.41

13	2001	499	2.93	5343	31.34
14	2002	498	2.92	5841	34.26
15	2003	460	2.70	6301	36.96
16	2004	468	2.75	6769	39.71
17	2005	493	2.89	7262	42.60
18	2006	622	3.65	7884	46.25
19	2007	617	3.62	8501	49.87
20	2008	697	4.09	9198	53.96
21	2009	731	4.29	9929	58.25
22	2010	753	4.42	10682	62.67
23	2011	893	5.24	11575	67.91
24	2012	986	5.78	12561	73.69
25	2013	1019	5.98	13580	79.67
26	2014	1112	6.52	14692	86.19
27	2015	1175	6.89	15867	93.08
28	2016	1179	6.92	17046	100
	Total	17046	100		

Table 4.1 shows the year-wise distribution of astrophysics research output in India from the year 1989-2016. A total of 17046 records published during the given period. The highest number of publications is in the year 2016 with 1179 records. There are variations in the number of publications of articles during this period taken for study. According to the year-wise analysis, the researcher has found that in the years of 2013, 2014, 2015 and 2016 were having more than 1000 publications. The years from 1989 to 2005 were having below 500 publications.

4.2 Document Type Analysis of Astrophysics Research Output in India

S · N o	Document Type	Rec s	TL CS	TGCS	Records %
1	Article	15583	30455	265199	91.42
2	Proceedings Paper	772	620	4315	4.52
3	Review	217	1517	28136	1.27
4	Letter	193	484	2543	1.13
5	Note	135	247	1347	0.79
6	Correction	72	36	257	0.42
7	Editorial Material	55	6	73	0.32
8	Reprint	8	11	44	0.05
9	Book Review	3	0	0	0.02
10	Biographical -Item	2	0	0	0.01
11	News Item	2	0	4	0.01
12	Book	1	0	32	0.01
13	Item About an Individual	1	0	1	0.01
14	Meeting Abstract	1	0	0	0.01
15	Review; Book Chapter	1	0	37	0.01
	Total	17046	33376	301988	100

Table 4.2: Document Type Analysis of Astrophysics Research Output in India

Found from Table 4.2 that the articles from journal article capture the first position out of 15583 publications, articles cover 91.42% with 30455 TLCS and 265199 TGCS respectively. The format of Proceedings articles as a source of mentioned research publication output follows second in order 772(4.53%) with 620LCS and 4315 GCS of publication output taken for this analysis. The source of Review publications is 217 of publications with 1517 TLCS and 28136 TGCS of research publication output takes third order in respect to a total number of publications examined in the study. The remaining sources

were Letter, Note, Correction, Editorial Material, Reprint and Book Review, etc. The research shows that the Citation scores, article format is the dominant source of TLCS and TGCS values. The format of Article has highest 30455 TLCS values and 265199 TGCS values, followed by review papers having 1517 TLCS and 28136 TGCS and Proceedings papers having 620 TLCS and 4315 TGCS values and remaining formats were having below 500 local citations scored credited respectively. It could recognize from the above discussion that journal articles predominate over other sources of publications. It occupies the pivotal place of in journal articles as a medium of scientific communication than any other form of publication. Majority of scientists have published their research papers in the format of journal articles.

4.3 Top 25 prolific authors in astrophysics research output in India

In this analytical study period of 1989 to 2016, 42418 scientists have produced 17046 articles contributions scattered over 209 journals. Following this, the researcher has ranked according to their highest publications for the top 25 published authors. The first 25 authors identified as the most productive contributors from India in astrophysics research output.

S. No.	Author	Recs.	TLCS	TGCS
1	Banerjee S	1265	2673	40735
2	Kumar A	971	2082	37533
3	Weber M	668	1893	31510
4	Hebbeker T	636	1538	20883
5	Tully C	632	1521	20469
6	Jain S	629	1842	31698
7	Malik S	581	1360	24256
8	Bhattacharya S	571	1480	23060
9	Kim H	562	1144	24384

10	Dominguez A	532	1228	17830
11	Biasini M	523	1186	16968
12	Chang YH	521	1663	23392
13	Zhang ZP	518	808	12883
14	Reucroft S	516	1432	19024
15	Filthaut F	502	1042	12614
16	Finger M	489	1309	23602
17	Aziz T	487	1245	17015
18	Kaur M	476	1248	15997
19	Choi Y	472	680	16484
20	Chen A	469	779	10951
21	Wang J	465	1201	24305
22	Iashvili I	464	1007	16323
23	Hou WS	460	678	16322
24	Sarkar S	460	1405	26759
25	Varelas N	458	959	16625

Table 4.3 Top 25 Prolific Authors in Astrophysics Research Output in India

Among the 42418 authors, “Banerjee S” has published 1265(7.4%) of articles and it is the highest publications with first rank position and 2673 TLCS; 40735 TGCS. Next to the author of “Kumar, A” has published the highest number of articles have been 971 (5.7%); 2082 TLCS; and 37533 TGCS; measured and this author publication position at second rank. The author “Weber, M” has published 668 articles (3.9%); 1893 TLCS; 31510 TGCS measured, it occupies the third rank in research output.

4.4 Country Wise Contribution in Astrophysics Research Output in India

S.No.	Country	Recs	TLCS	TGCS
1	India	17046	30636	281232
2	USA	3697	7101	130034
3	Germany	2231	3462	89399
4	France	1939	4189	78112
5	UK	1797	3715	89795

6	Italy	1513	2892	75223
7	Russia	1469	2384	65435
8	Spain	1360	2307	70736
9	Peoples R China	1307	2133	48285
10	South Korea	1192	2326	43842
11	Switzerland	1178	2393	64072
12	Japan	1150	2251	52085
13	Netherlands	1104	1611	42798
14	Taiwan	933	1355	39365
15	Australia	923	1883	43085
16	Brazil	899	1400	29702
17	Poland	891	1352	38797
18	Canada	874	1291	50828
19	Czech Republic	751	1266	25387
20	Hungary	686	1600	28802
21	Mexico	631	1574	29557
22	Finland	615	1637	46568
23	Austria	531	806	23271
24	Sweden	522	917	26684
25	Bulgaria	503	1334	16960

Table 4.4 Country wise contribution in Astrophysics Research output in India

Table 4.4 offers the details of the origin of the country of publications in the astrophysics research literature. It has found that the results of research in astrophysics research literature output originated from 106 countries. The USA is the highest collaboration productivity with India (3687) records and total local citation score of 7101 and total global citation score of 130034 measured and it stood the first rank. Germany is in the second rank with 2232 records and 3462 TLCS and 89399 TGCS and in third-place France contributed 1939 records with 4189 TLCS and 78112 TGCS. The countries the UK, Italy, Russia are in the 4, 5, 6 places respectively with 1797, 1513, 1469 records. The countries Spain with 1360 records, Peoples R China with 1307 records followed by South Korea 1192 records and Switzerland 1178 records. These countries are in the 7th to 10th places. The

countries Japan and Netherland are in the 11th and 12th places with 1150, 1104 records respectively.

Conclusion:

The result of year-wise (twenty-eight years from 1989 to 2016) distribution by different sources of astrophysics research output in India when examined reveals a maximum contribution in the year of 2016 with 1179 records. The analysis result of source wise publications of astrophysics research output in India ascertains the fact that journal articles 15583 (91.42%) publications predominate over other (fourteen types) sources of publications. Majority of scientists have published their research papers in the format of journal articles. Among the 42418 authors, “Banerjee S” has published 1265(7.4%) of articles and it is the highest publications with first-rank position and 2673 TLCS and 40735 TGCS scores measured. Next to the author of “Kumar, A” and “Weber, M” has occupied second and third position respectively 971 and 668 articles. The findings of associated countries with astrophysics research output in India, the countries of USA, Germany and France were contributed several articles among the countries.

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Treatment of Humanities as a discipline in DDC

Satarupa Saha and Dr Sudip Ranjan Hatua

Abstract

DDC is the most acceptable classification scheme in the world during 135 years. DDC has so many lacunas. It is a significant review of different edition that occurrences relocation, phoenix schedule and does modification in DDC. In DDC represents in the various discipline under the specific domain and its related concepts along with class numbers. Various approaches of the universe of knowledge have been classified these are Humanities, Natural Science and Social Science the following sequence are applied according to their invention. In DDC we could not found Humanities as a discipline in ten main class number. This paper explains the treatment of these disciplines which are included in the Humanities. Concept wise in various edition describes the discipline of Humanities has been exhibit in DDC. We also conclude classification scheme need modification and present a different structure of knowledge depending on the design through the ever-changing process.

Keywords:

Humanities, DDC, Philosophy, Language, Literature, History, Religion, Arts, History.

Introduction:

The systematic organisation of knowledge given a better result by its use. The classification schemes organise subjects according to their character and features for the easy dissemination of information. In this purpose, classification schemes are being designed to organise subjects in an order of “helpful sequence”. Sharma (1998) states that DDC is based on the Decachotomy structure and therefore it divides the universe of knowledge in 10 main classes [1]. DDC, which was first published in 1876 with the title of ‘A Classification and arranging the books and pamphlets of a library’. At that time the concept of a universe of knowledge was too small to present that a whole scheme was controlled within 42 pages. But now it’s 23rd edition needs 4318 pages to cover the whole universe of knowledge now. It’s 2nd edition to 13th edition was published under the title

“Decimal Classification and Relative Index for Arranging, Cataloguing and Indexing public and private Libraries and for Pamphlets, Clippings, Notes, Scrapbooks, Index, Resumes etc.” First-time Decimal Classification and Relative Index was introduced in its 15th edition in 1951. But it was published twice for the cause of lots of criticism by the users. After that Dewey’s son was edited and published revised 15th edition under the title ‘Dewey Decimal Classification & Relative Index’. It’s 1st to 15th edition was published only in one volume and 16th & 17th edition was in two volumes and from 18th to 19th were launched in three volumes and from 20th to 23rd were published in four volumes.

2. Problem identification:

Classification schemes are available for knowledge organization to the library professional to retrieve and disseminate information or document in time. Humanities as a subject represent human creativity- through Arts, Fine Arts and Visual Arts. On the other hand, Humanities also deals with various related subjects of the human being. Therefore all those subjects to belong to “Humanities”.

So, basic problems are-

- Which subjects have included in the humanities domain?
- Is there any overlapping of humanities, social sciences and the arts occur in DDC?

3. Objective:

The objective of this article is to study the mapping of humanities in different classification schemes. To be precise, the aims of this article are.

1. How humanities have been treated in DDC in its various editions
2. To Study how various subjects under humanities developed over various editions in respect of subject descriptors
3. To identify the new concepts which have been added from time to time in the main Classes.
4. To identify the concepts from the schedule which became obsolete now.

4. Methodology

The present work follows the evaluation study and document survey method. To fulfil the objectives stated above following methodologies have followed to be precious.

Understand the humanities by studying various Encyclopaedias. Study and observe in details the DDC from 1st to 23rd edition to collect the relevant data.

5. Universe of knowledge:

According to Satija and Martínez-Aliva (2017), knowledge is an ever-growing, changing, process. New subjects are forming and getting popularity day by day by amalgamation, osmosis, fusion, fission or other techniques. Old subjects are changing their former status and create relationships with various new ideas and forming a new concept. But a subject has its characteristics and also systematized homogeneous group whose intension and extension are comfortably following the particular specialization. The universe of knowledge and has been divided into three major areas which called disciplines by the ideas or images. Satija (2000) expressed that Classically there are three major disciplines of the universe of knowledge

which are Sciences based on the study of natural objects, Social sciences which deals with problems of society and Humanities created by imagination, apperception. However, in library classification schemes are mostly identified with what is known as specific subjects within the context of a document.

Humanities: According to Encyclopaedia Britannica (2010) “Humanities”, considered as a general education study of course curriculum was identified from classical Greek in mid-5th century BC. In Roman times, seven liberal concepts of arts were included under this discipline. Those are grammar, rhetoric, logic, along with arithmetic geometry, astronomy, and music. In the late 15th century, medieval education was included in this domain. In the 18th century, ‘Humanities’ designated as a subject during this period practical knowledge shifted into traditional knowledge. As a result, it has been found that ‘science’ subjects such as arithmetic geometry has been removed from this domain. In the 19th century, German philosophers affirmed that ‘Humanities’ is the “spiritual sciences” then philosophy and theology occupied a very respectable position. For example, in the middle Ages theology was considered the queen of sciences and other subjects were valued according to their capacity. Pradhan (2002) explained ‘Humanities’ as a discipline, branch of knowledge which is concerned with a philosophical framework that depends on human culture & human civilization. It creates their thought, ideas, rational thinking, customs, rituals, attitude, imagination and experiences unique ability of the expressiveness of the people.

Study of Humanities in Encyclopedias

To understand “Humanities” following six Encyclopaedia’s have been consulted as shown in Table 1.

Encyclopedia	Year	Publication	Place
Encyclopedia Americana International Edition	1966	Americana corporation	USA
The Encyclopedia of Philosophy	1967	Macmillan Company	Great Britain
The New Encyclopedia Britannica	1974	Encyclopedia Britannica Inc.	USA
The New Caxton Encyclopedia	1977	The Caxton Publishing company limited	London
International Encyclopedia of the Social Science	2008	Macmillan Reference	USA
Arts & Humanities Through The Eras	2005	Thomson Gale	New York

Table 1 : Encyclopaedia

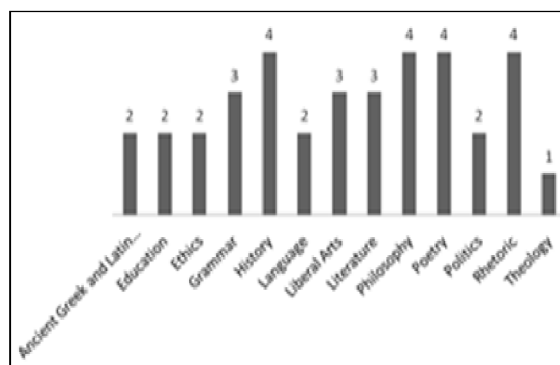


Fig.-1 : Major subjects reflects in different Encyclopaedias

It is found that History, Philosophy, Poetry, and Rhetoric are the topmost facets included in Humanities in the six Encyclopedias stated table 1, followed by Liberal art, Grammar and Literature. They also include education, ethics, language, politics and theology have also included in humanities but in a less pace.

So it is understood from well accepted and well established documentary sources that Humanities included- History, Philosophy, Poetry, Rhetoric, Liberal art, Grammar, Literature, education, ethics, language, politics and theology.

6. Study of Humanities in DDC

DDC has ten main classes in the first summary. It has been notified that 000 class number is defined by 'Generalities' class which has accumulated with general topic e.g. encyclopaedia's, newspaper, general periodicals and does not merged with any other subjects. **Masarat (2016)** described that this class is also used for certain specialized disciplines that deal with knowledge and information, e.g., computer science, library and information science, journalism. Class 300 has been notified for the Social Science and broadly covers some major subjects like Sociology, anthropology, Statistics, political Science, Law, Public administration, Social Problems & Services, education, Commerce, Communications, Transportation & Customs. Class 500& 600 is devoted to Natural Sciences like mathematics and Applied Sciences like Technology, Medicine, and Agriculture etc. But 100 cover Philosophy, Parapsychology & Occultism & Psychology, and Logic. Class 200 has devoted to Religion. Class 400 is identified for Language, Linguistics, Class 700 covers the Arts, Fine and Decorative Arts and Music, class 800 is Covers Literature and includes rhetoric, prose, poetry, drama, etc. It has been notified that Humanities is missing in any ten main classes in DDC. However, from encyclopaedic study, lots of facets which falls under Humanities have been placed either independently or put under

several other classes. For example, Class 900 is devoted primarily to History & Geography. So Class 100, 200, 400, 700, 800 and 900 Class have treated independently as separate specific subjects but actually, they should fall under Humanities.

7. Data Collection:

The Classic source of Encyclopaedia has defined Total 12 subjects are included in Humanities with their related subjects in their origin which have been shown in table 1. These subjects such as poetry, rhetoric included in the Literature class in DDC, ethics is included in Philosophy class in DDC, theology is the part of Religion class in DDC and Grammar and Language have included in Languages class in DDC. Education and Politics both of the subjects are part of the Social Science class in DDC. The Arts previously called as liberal arts, Literature and History are also identified as one of ten main classes in DDC. Some subjects are overlapped in Social Science which also is the facets of Humanities.

A detail observation of 100 Class DDC has found lots of facets as shown Table 2 which actually may be the subject of Humanities as per Encyclopaedic study.

Class no	DDC edition				
	1 st edition	2 nd to 14 th edition	15 th to 16 th edition	17 th to 18 th edition	19 th to 23 rd edition
100	Philosophy	Philosophy in general	Philosophy	Philosophy and related disciplines	Philosophy, parapsychology, and occultism, Psychology
	1 st to 16 th edition		17 th edition	18 th & 19 th edition	20 th to 23 rd edition
110	Metaphysics		Ontology and methodology	Metaphysics (Speculative Philosophy)	Metaphysics
	1st edition	2 nd to 16th edition	17 th & 18th edition	19 th to 23rd edition	
120	Not found	Other metaphysical topics	Knowledge, cause, purpose, man	Epistemology, causation, humankind	

	1st edition	2 nd to 13th edition	14 th edition	15 th to 15 th stand. edition	16th edition	17 th to 18 th edition	19 th to 21 st edition	22 nd to 23rd edition
130	Anthropology	Mind and body anthropology	Physiologic, abnormal and differential psychology; metapsychology	Fields of Psychology	Branches of psychology, and Parapsychology	Parapsychology, parapsychology, occultism	Parapsychology, parapsychology, occultism	parapsychology, and occultism.
140	Schools of psychology	Philosophical system edition	Philosophic system edition	Philosophical topics	Specific philosophical viewpoint	18 th to 23rd edition		
150	Mental faculties	1 st to 14th edition	2 nd to 11 th edition	12 th to 15 th edition	16 th to 18 th edition	19 th to 21 st edition	22 nd to 23rd edition	
160	Logic	Logic	Logic	Logic	Logic	Logic	Logic	Logic

	1 st to 2 nd edition	3 rd to 14th edition	15 th to 16 th edition	17 th to 23rd edition
170	Ethics	Ethics, Theoretic and applied	Ethics	Ethics (Moral Philosophy)
180	Ancient Philosophers	Ancient oriental philosophy	Ancient & medieval philosophy	Ancient, medieval, eastern philosophy
190	Modern Philosophers	Modern Philosophy	Modern Western Philosophy	Modern western and none eastern philosophy

Table 2: Philosophy-as reflected in various editions of DDC

It has been found in table 2 that class number is 160, 170 of subject descriptors do not change its nomenclature from 1st edition to 23rd edition. But the class number 110, 140 has changed the subjects descriptors time to time. The maximum number of new concepts have been introduced in class number 120, 130, 140, 180, and 190 again and again. Class number 150 almost sustained its descriptors among all the editions. Out of nine subclasses under Philosophy 130 Class has maximum subject descriptors changed their nomenclature from 1st to 23rd Ed. The Class got its descriptor as Philosophy in its 1st editions but at 23 edition it becomes “Philosophy, parapsychology, and occultism, Psychology”.

Surprisingly Ontology as a concept came only one time in the 17th edition replaced by metaphysics.

Same way by studying other classes of DDC it was found that there were no remarkable changes in Religion (200) Class. It started in its 1st edition as “Theology” and next edition onwards it continued as “Religion General works”. After studying DDC thoroughly it has been identified that ‘Theology’ is the main concept in class 200. From the 2nd edition theology, has been replaced by religion.

Same thing found in Class 400 i.e. Philology turns into Linguistics in its 15th edition and finally from 16th edition onwards it treated as “Language” which is one of the main facet of Humanities as per Encyclopaedic study.

One of the major facets of Humanities is ‘The Art’ which finds a separate Class 700 in DDC. It used the descriptor Fine Arts from 1st to its 14th edition. From 16th edition it has been treated as The Arts. The major and frequent changes have been found under the subclass of 730, 740, 760 and 770. Though the complete change of concept has found in 790 Class where the concept “Amusements” has found in a new nomenclature as “Recreational and performing arts” since its 18th edition.

After thorough observation, it has been found that main class 700, 760, 790 have changed their subject descriptor from 1st to 23rd edition such The arts, Printmaking and Recreational and performing arts. Maximum change has been occur in Landscape to Area planning and landscape architecture it covers 48.83%.

Like all other facets described above the

Literature also considered as a major facet of Humanities as per the encyclopaedic study. However, DDC gives a separate and specific Class (800) for it. It is observed that there were no major changes of the main nomenclature of this class, but over the time lots of new sub facets and concepts have been added under this Class. It is found that 810 Class started with Treaties and Collections in its 1st edition but 2nd edition onwards it is represented under the title of "American literature in English". Over time new languages like French, Spanish, German, Latin, Greek, etc have been incorporated in this Class.

Same way History, a major facet of Humanities has been found a separate Class along with Geography in DDC. But it is also observed that the nomenclature "History" sustained for a long time (since 1st to 16th) and later from 17th edition onwards it includes Geography with a new nomenclature "General geography and history and their auxiliaries". Over the time few new concepts have also been added like Geografy Travels Description, General biography, genealogy, insignia etc.

8. Finding of the study:

This paper gives an idea which is accumulated and presented below:

1. Two Class 100 and 900 include new concept along with its original nomenclature.
2. Class 200, 400 and 700 changed its nomenclature completely
3. Over time lots of new concepts and subjects have been added in Class 100, 400 and 800

4. Also over the time few facets like Anthropology, Natural Theology, Amusement, Engraving, Treaties and Collections etc has been obsolete and replaced by other new facets.

Conclusion

From the detailed study of all the editions (1st to 23rd) of DDC, it may be concluded that there is the various placement of subjects in Arts and Science found in DDC are questionable. Why Humanities as one of the major subject has not been considered as the main class is not clear. Rather lots of sub facets have been segregated from the Humanities and placed in either separate broad Class or put under new class like social sciences. It also observed the various subjects of Humanities are placed in six main classes of DDC. Major facets of Humanities have been placed in class 000 and 700. However, other major classification schemes put all the related facets of Humanities in consequent place and a clear co-relation has been reflected among the subjects there except DDC. It may be suggested that Humanities may be given a Main Class in DDC and the entire related and relevant subject treated separately can place in one Class known as Humanities.

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