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Summer 9-4-2021

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MONDAL, DEBDAS, "Growth and Development of National Digital Library of India since inception under the initiative of IIT Kharagpur: A Comprehensive Study" (2021). *Library Philosophy and Practice (e-journal)*. 6248.

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# Growth and Development of National Digital Library of India since inception under the initiative of IIT Kharagpur: A Comprehensive Study

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## Abstract

*The establishment of National Digital Library of India has been changed the dimension of digital library and made a remarkable milestone in the world of online information dissemination process. This article explores the current content of documents and learning resources and their growth from the year 2016 to 2021. This paper also includes the subject wise developments of various collections. It is also finds out the coverage of participatory institutional members which share their resources with NDLI. The increasing numbers of registered and active personal members have also been included in this article. Data are analyzed using suitable charts to present the result prominently. Some recommends have been made for the future development and to find out the effectiveness of NDLI.*

**Keywords: Digital Library, Digital Repository, National Digital Library of India, Virtual Library.**

## 1. Introduction

Traditional library system is going to be useless day by day and virtual library system is getting popular due to tremendous advancement of computer and information technology. "21st century users need a well thought out mechanism to organize, store and access information 24/7 and library portals have become a very useful and handy to provide web enabled information services. In addition, libraries are supplementing their collection with e-resources, which intern demands for a properly designed website to facilitate its maximum usage" (Shilpa Rani). In 2020, a worldwide pandemic was started due to COVID-19 and information users are bound to stay home for lockdown. The students, researchers, professionals are fully depend up on the online information retrieval system and National Digital Library of India played a vital role in providing digital information in a large scale through their digital repository. NDLI is a "virtual repository of learning resources with a single-window search facility. Filtered and federated searching is employed to facilitate focused searching so that learners can find out the right resource with least effort and in minimum time" (Jharotia).

## 1. NDL India: at a glance

- ☞ NDLI is the project was started by Ministry of Human Resource Development (MHRD) in May 2016 and dedicated to the nation in June 2018.
- ☞ The project is under the aegis of National Mission on Education through Information and Communication Technology (NMEICT).
- ☞ It is being developed and maintained by IIT Kharagpur.
- ☞ Users can access the National Digital Library - <https://ndl.iitkgp.ac.in/>
- ☞ The NDL mobile app for Android can be accessed at - <https://play.google.com/store/apps/details?id=com.mhrd.ndl&hl=en/>
- ☞ Contents relevant for different levels of users i.e. primary to post graduates.
- ☞ NDL has been designed to benefit all kinds of users like students (of all levels), teachers, researchers, librarians, library users, professionals, differently able users and all other lifelong learners.
- ☞ More than 60 types of learning resources are available - books, articles, manuscripts, video lectures, audio lectures, thesis, presentation etc.
- ☞ Items are available in more than 100 languages.
- ☞ Repository hosts contents from multiple subject domains like Technology, Science, Humanities, Agriculture and others.
- ☞ Contents available for different subject domains: Technology, Arts and Humanities, Social Sciences, Natural Science etc.
- ☞ A customised service provided in a 24x7 integrated environment.
- ☞ Repository integrates contents from different Indian and international Institutional Repositories.
- ☞ A single window search facility to ever-growing digital content repository.
- ☞ Users need to register with a user id and password for login.

## 2. Objectives of the Study

This comprehensive study was conducted to fulfill some objectives. This are-

- To make a general overview and features about National Digital Library of India.
- To present the current content of National Digital Library of India.
- To show the growth and development trends of various documents hosted in NDLI.
- To indicate the growth of different kind of learning resources hosted in the NDL, India website.
- To present the data with figure related to the growth of subject wise collection.
- To mention the institutional members associated with NDLI for resource sharing.
- To preview the effectiveness of NDLI with registered and active personal users.
- To make some recommendations for future development in respect of collection and user.

## 3. Review of literature

National Digital library of India is the premier digital depository not only in India, even in international level. A number of studies have been revolved on digital library initiatives and NDLI has been discussed in this context. Few studies have been conducted on the effectiveness of NDL, India on current education and research field. “It is being developed to help students to prepare for entrance and competitive examination, to enable people to learn and prepare from best practices from all over the world and to facilitate researchers to perform inter-linked exploration from multiple sources” (DAS).Barse also agreed with Das

and mentioned that “It is being arranged to provide support for all academic levels including researchers and life-long learners, all disciplines, all popular form of access devices and differently-abled learners”. **Jharotia** indicated in his article “The pilot project is devising a framework suitable for future scale up with respect to content volume and diversity to become a full-blown National Digital Library of India over time”. According to **Thakur** “The NDLI is the largest online library in the country especially for academic purposes.....”.**Borgohain** commented that NDLI is “to provide online search facility to huge variety of virtual repository of online resources and integrate many national and international digital libraries at one portal. It provides support as interface for studying and learning Indian languages and holds content of many Indian languages”.**Bashir** in his study commented “the NDLI India is presently one of the biggest treasure troves in the global cyberspace containing information on any branch of knowledge for any user at anytime from anywhere in many languages and formats..... NDLI India is destined to become a national asset thereby bringing a significant change in the domain of online content search for both academics and general readership.”From the beginning of the project NDLI is giving importance on its collection and service. So “NDLI has become an online digital treasure-trove of India with approximately 1.26 core content resources.....bringing up a significant change in the domain of online content search for both academics and general readership” (**Sharma**).NDLI, India “is an all-digital library that are integrating all existing digitized and digital contents across Institutions of the nation to provide a single-window access with e-learning facility to different groups of users ranging from primary level to higher education level and even life-long learners of our country” (Wikipedia).

## 4. Methodology

Data was collected from the library records and website. Records of data were prepared by the library authority time to time for various purposes. Library records are analyzed and prepared the current tables in various aspects.

## 5. Scope of the Study

National Digital Library of India is the pioneer in the field of digital library and playing a vital role in making new digital India. From the beginning of the service NDLI, India, is developing its collection in collaborative way and serving the nation with user satisfaction. So the growth and development of e-contents in various perspectives is notable issue in this regards. In this article, we have tried to present the growth of collection, collaborators and users from 2016 to March, 2021.

## 6. Limitations

This study is limited in the view of time and space. Only the National Digital Library of India is selected for this purpose. Developmental trends of various resources and members are shown from 2016 to 2021. As NDLI was started its functioning from 2016, so the previous data are not available in this regards.

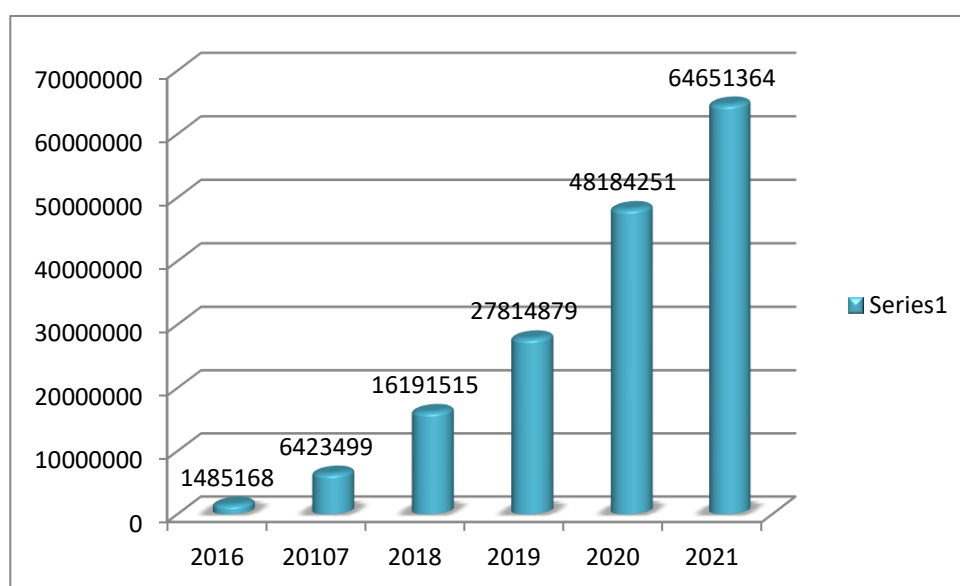
## 7. Data Analysis and Discussions

Data are collected from the various respects such as year wise growth of total number of contents, different types of documents and learning resources, year wise growth of various subjects and increasing number of institutional users and personal users. These data are presented as tabular form and the result or growth rate is shown using various charts.

**Table-1: Year wise growth of contents hosted in NDLI**

	2016	2017	2018	2019	2020	2021
Total number of contents hosted in NDLI website	1485168	6423499	16191515	27814879	48184251	64651364
Growth rate		332.50 %	152.06 %	71.78 %	73.23 %	34.17 %

This table (Table-1) is related to the total number and growth rate of contents hosted in NDLI website. The table is showing the growth rate contents in 2017 are 332.50%, in 2018 152.06%, in 2019 71.78%, 73.23% in 2020 and 34.17% in 2021. The table indicates the growth rate is falling down compared to the year 2017 and 2021. The following figure is showing the year wise growth rate of contents hosted in NDLI, India website.



**Table-2: Year wise growth of different type of documents available in NDLI**

Type of documents	2016	2017	2018	2019	2020	2021
Text	1256372	5609348	15891651	26791511	46611277	62944786
Audio	206337	207844	217228	223443	242252	244740
Video	9725	19564	26592	80645	437154	601012
Image	1879	1981	57024	228651	421623	486036
Animation	373	373	389	389	1189	1230
Simulation	289	289	289	289	11457	11457
Presentation	189	200	573	177685	177820	177836
Application	4	4	10	2042	2945	3094

The above table (Table-2) is related to the year wise growth of different type of documents available in NDLI. The collected data shown in the table indicates that the growth rate of text, audio, video and image are very high compared to the animation, simulation, presentation and application. All types of documents have been increased from the year 2018. The number of presentation has been increased tremendously from the year 2019. The following chart is presenting the year wise growth trend of documents

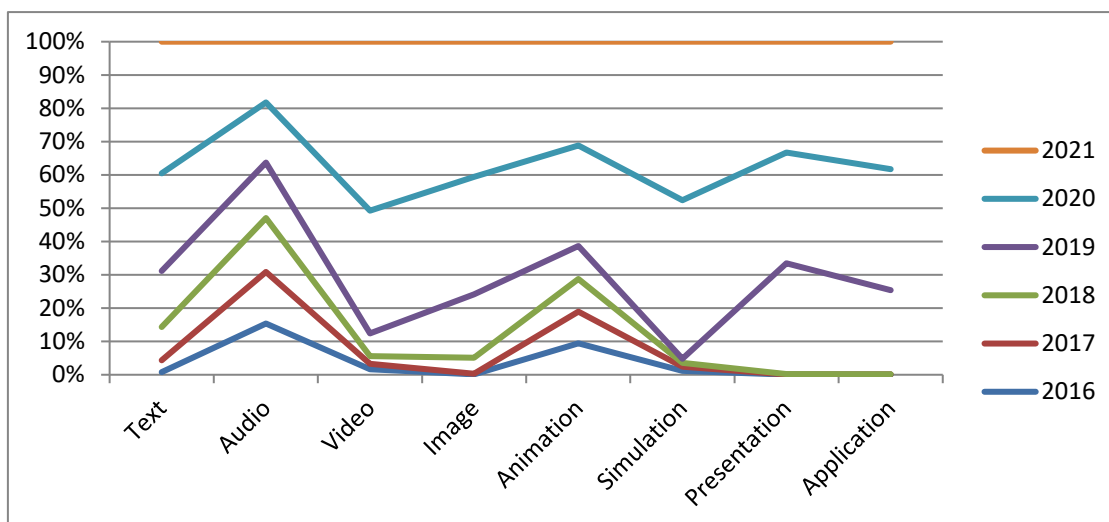


Table-3: Year wise growth of different learning resources in NDLI

Type of learning resources	2016	2017	2018	2019	2020	2021
Article	685659	3308733	11633996	19959259	29767647	36430452
Book	732968	2885058	3436777	3988496	6400318	6506032
Thesis	16985	78543	98660	451915	641443	737560
Question Paper	3987	10571	11627	22198	30236	36150
Audio Lecture	76	139	269	1345	4116	4325
Video Lecture	4873	17569	24200	77817	366235	469927

This table (Table-3) reveals with year wise growth of different learning resources in NDLI website. It is presenting the data related to growth of articles, books, thesis, question papers, audio and video lectures from the year 2016 to 2021. The following figure is showing the growth of different learning resources.

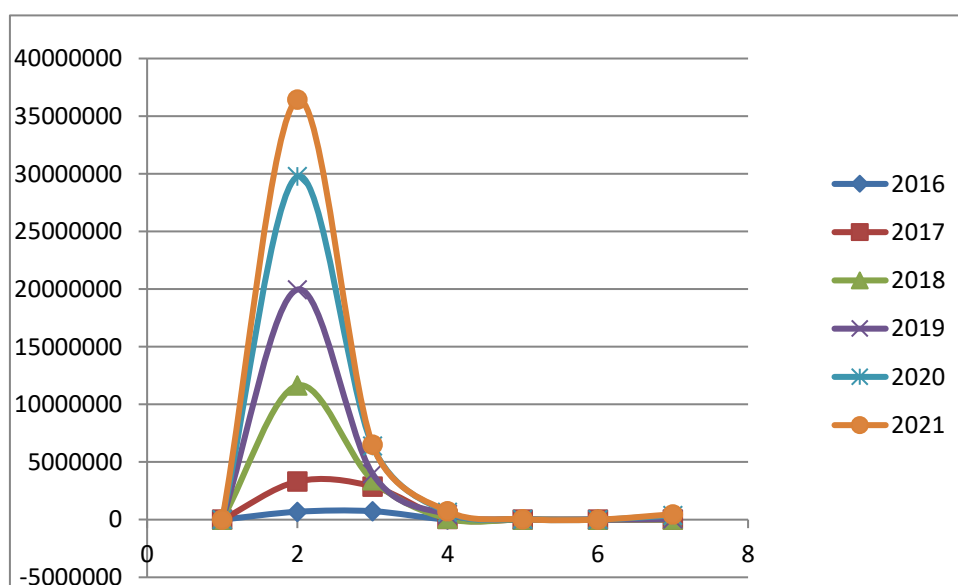


Table-4: Year wise growth of different subjects available in NDLI

Type of subject	2016	2017	2018	2019	2020	2021
Computer Science, Information and General Work	71879	89503	1448595	4617756	10004506	15425854
		24.51%	1518.48%	218.77%	116.65%	54.18%
Philosophy and Psychology	19805	44478	346804	537627	542529	609488
		124.57%	679.72%	55.02%	0.91%	12.34%
Religion	17332	61653	187975	203042	208188	228464
		255.71%	204.89%	8.01%	2.53%	9.73%
Social Science	139903	235656	1409334	2053488	4572336	5444036
		68.44%	498.04%	45.70%	122.66%	19.06%
Language	24235	35478	62175	88705	108471	181719
		46.39%	75.24%	42.66%	22.28%	67.52%
Natural Science and Mathematics	85186	346203	4214214	7780742	8416754	9787295
		306.40%	1117.26%	84.63%	8.14%	16.28%
Technology	94889	4029251	7940267	9996901	10476445	12506642
		4281.64%	97.06%	25.90%	4.79%	19.37%
The Arts: Fine and Decorative	10709	52697	196588	282706	451640	1740152
		392.08%	273.05%	43.80%	59.75%	285.29%
Literature and Rhetoric	93502	187131	497982	584015	789345	953048
		100.13%	166.11%	17.27%	35.15%	20.73%
History and Geography	33851	115479	445935	487652	613712	947761
		241.13%	286.16%	9.35%	25.85%	54.43%

This table (Table-4) is related to the subject wise growth of contents hosted in NDLI, India website. The growth rate of documents on computer science, information science and general work in 2018 is tremendously high (1518.48%). The growth rate of philosophy and psychology in 2018 is higher (679.72%) than other years. Documents on social science also increased remarkable (498.04%) in 2018. The growth rate of natural science and mathematics in 2018 is very high (1117.26%). Developmental trend of technology has been slow down in the consecutive years. In 2017 it was 4281.64% in 2017 where as 4.79% in 2020. Growth rate of arts, literature and history and geography have been fallen down in the consecutive years. The bellow chart is showing the growth rate of documents on various subjects.

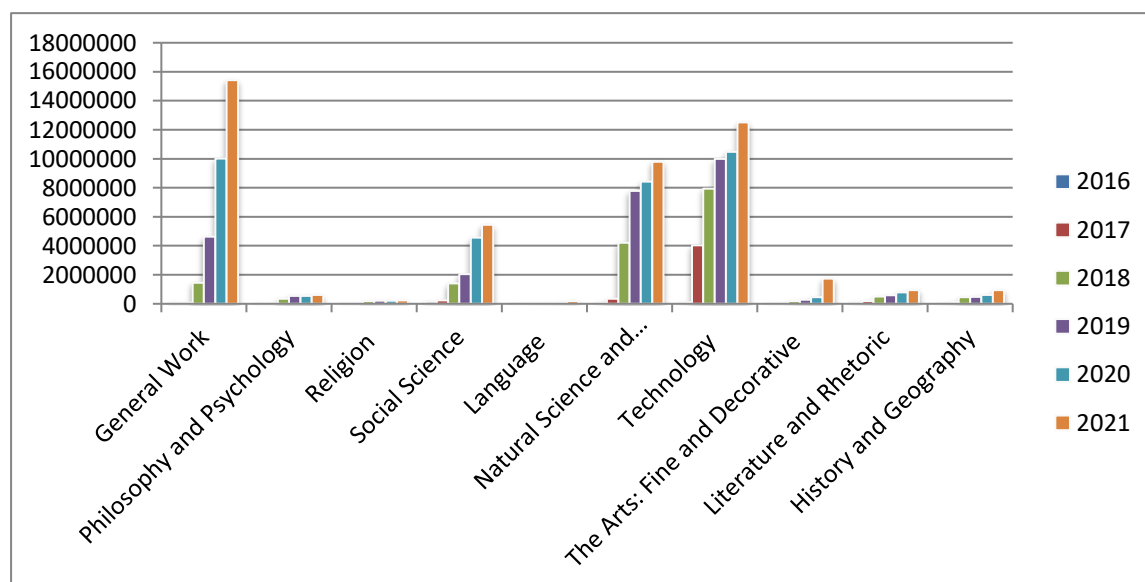


Table-5: Year wise growth of institution collaborate with NDLI

Type of institute	2016	2017	2018	2019	2020	2021
IITs	8	10	12	14	15	15
IIMs	1	2	2	3	3	2
NITs	2	2	3	3	3	3
Universities	12	13	20	24	25	26
Other Institutes	75	100	129	174	247	297
Total number of institutes	98	127	166	218	293	343
Growth rate		29.59 %	30.70 %	31.32 %	34.40 %	17.06%

The above table (Table-5) is showing the year wise growth of institutions collaborated with NDLI. Different institutions include National Institute of Technology (IITs), National Institute of Management (IIMs), National Institute of Technology (NITs) and universities. The collected data suggest that it is developed 29.59% in 2017, 30.70 % in 2018, 31.32 % in 2019, 34.40% and 17.06% in 2020 and 2021 respectively. The following chart is showing the total number of institutions collaborated with NDLI in the year 2021. The following figure is showing the growth rate of institutions collaborated with NDLI.

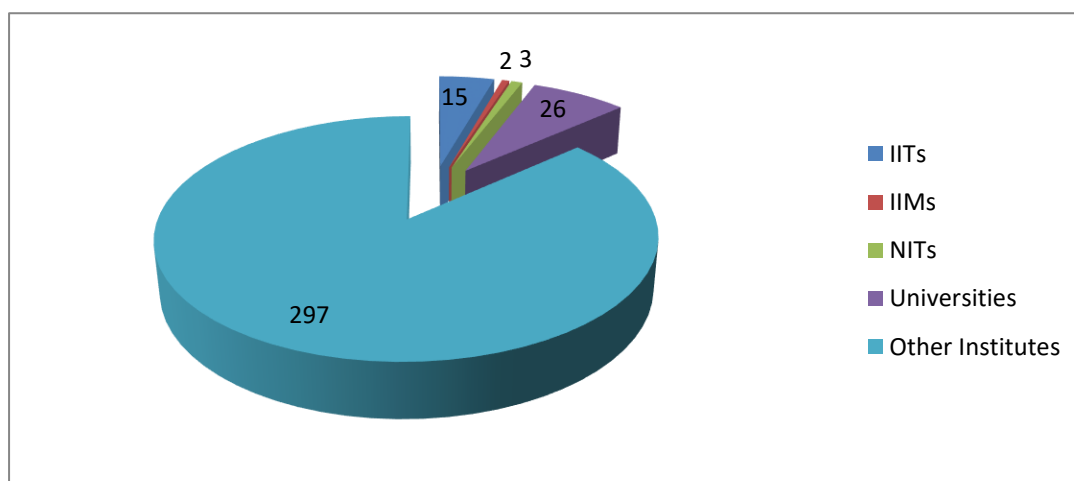


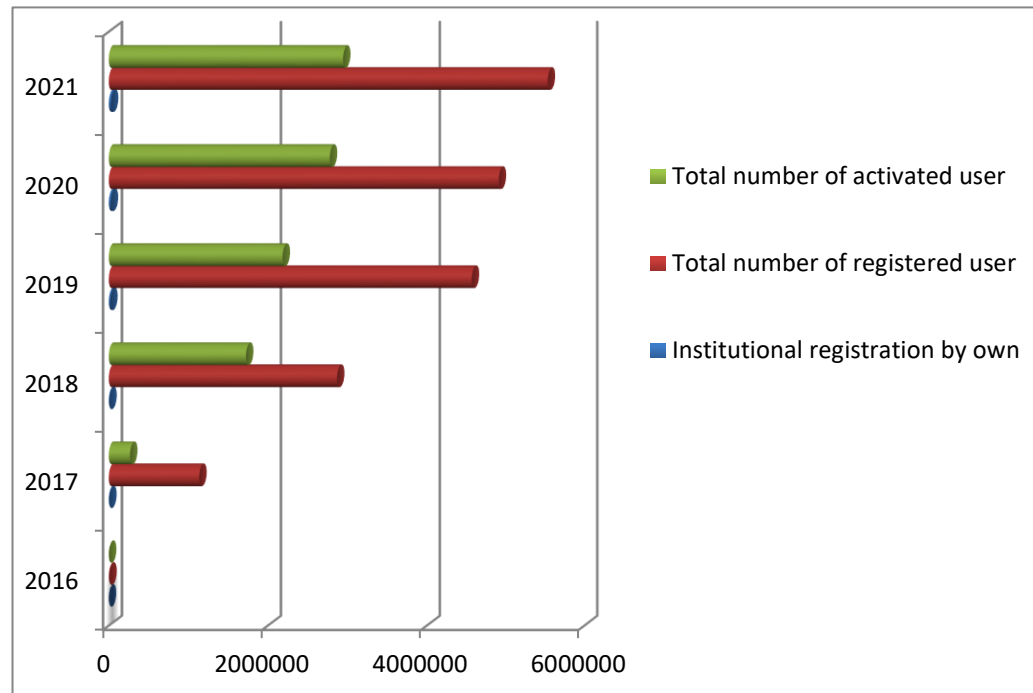
Table-6: Year wise growth of different type of users registered with NDLI

Type of User	2016	2017	2018	2019	2020	2021
Institutional registration by own	66	4732	6484	17702	24186	26135
		7069%	37.02%	173.01%	36.62%	8.05%
Total number of registered user	6582	1138121	2871246	4571246	4914407	5536119
		17191%	152.27%	59.20%	7.5%	12.65%
Total number of activated user	1621	267080	1725907	2186896	2780805	2947747
		16376%	546.21%	26.70%	27.15%	6.00%

\*G R= Growth Rate (%)



The above table (Table-6) reveals with the year wise growth of different type of users registered with NDLI. The table is showing the growth rate of Institutions registered by their own 7069%, 37.02% 173.01% and 36.62% in the year 2017, 2018, 2019 and 2020 respectively. The growth of personal users registered with the NDLI is 17191%, 152.27%, 59.2% and 7.5% in these consequent years. The growth rate of activated users is 16376%, 546.21%, 26.7% and 27.15% in the years respectively. The following figure is presenting the growth rate of registration of institutional users, personal users and activated users.



## 8. Major Findings

Major findings received from this study are-

- The growth rate contents in 2017 are 332.50%, in 2018 152.06%, in 2019 71.78% and 73.23% in 2020.
- The developmental trend of text tremendously high in four consecutive years.
- The growth rate of video collection in 2020 very high (442.07%) compared to 2019.
- The collection of presentation increased (30909.59%) in 2019 compared to 2018.
- Number of article, book and thesis has been grown up maximum in four consecutive years.
- Subject wise growth of content enriched maximum in the year 2018 compared to other years.
- The growth rate of collaborative institutions is more or less equal in this period.
- Both the institutional members and personal members have registered tremendously high in 2017 which growth rate is 7069% and 17191% respectively.

## 9. Recommendations

NDL, India is an initiative of digital repository at national level. It is effective for all kind of users around the globe. Same kind of initiatives should be taken at state level district level and local level to store, preserve and disseminate the digital information. Central and state Governments should take the initiatives and provide adequate fund and other resources to establish such projects.

## 10. Conclusion

The emerging trend of digital world is affecting the all sectors related to the information exploration. There has been noticed certain changes in information acquisition, retrieval and dissemination. NDLI has done a lot in this direction by increasing its various information sources and disseminating them among the users worldwide. "With right focus, encouragement and support, the NDL India is destined to become a national asset thereby bringing a significant change in the domain of online content search for both academics and general readership" (Bashir).

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