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Children National Science Digital Library for India (CNSDLI)

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Abstract

The Children National Science Digital Library for India (CNSDLI) represents a pioneering initiative aimed at revolutionizing education and fostering a culture of scientific curiosity among young learners in India. This abstract explores the multifaceted dimensions of CNSDLI, shedding light on its significance, features, and the transformative impact it holds on the educational landscape of the nation. CNSDLI is a comprehensive digital library meticulously curated to cater to the inquisitive minds of children, providing them with a vast repository of educational resources, interactive materials, and engaging multimedia content. The library transcends geographical constraints, granting students across India access to a wealth of knowledge regardless of their location, economic background, or educational institution. The digital platform of CNSDLI promotes interactive learning, allowing children to engage with scientific phenomena in immersive and innovative ways. Through user-friendly interfaces and intuitive navigation, young learners can delve into subjects like physics, chemistry, biology, mathematics, and environmental science, making the process of learning both enjoyable and intellectually stimulating. The library's integration of virtual reality and augmented reality technologies further enhances the learning experience, enabling students to visualize abstract scientific principles in a tangible and captivating manner. In conclusion, the Children National Science Digital Library for India (CNSDLI) stands as a beacon of educational innovation, promoting scientific literacy, critical thinking, and creativity among India's youth. By providing accessible, engaging, and interactive scientific resources, CNSDLI not only augments classroom learning but also inspires a new generation of scientists, innovators, and thinkers, paving the way for a brighter and more scientifically literate future for India.

Keywords: Children, Science, Educational, Landscape, Knowledge, Digital, Learning

INTRODUCTION

In the digital age, education is not confined to textbooks and classrooms; it's an interactive, immersive experience that should be accessible to all, especially the young minds shaping the future. Recognizing this imperative, India has embarked on a transformative educational endeavor, the Children National Science Digital Library for India (CNSDLI). This introduction explores the groundbreaking initiative of CNSDLI, shedding light on its purpose, features, and the profound impact it has on the educational landscape for children across the nation.

CNSDLI emerges as a pioneering digital initiative designed to ignite the curiosity of young learners and foster a love for science from an early age. Rooted in the ethos of inclusivity and accessibility, this digital library represents a virtual treasure trove of scientific knowledge tailored specifically for children. It transcends geographical barriers, socioeconomic disparities, and limitations of traditional educational resources, ensuring that every child in India, regardless of their background, has equal access to high-quality, engaging, and age-appropriate educational content.

At the heart of CNSDLI lies a vast repository of interactive multimedia resources spanning various scientific disciplines. From captivating animations and virtual experiments to educational games and e-books, the library offers a dynamic and diverse array of learning materials. These resources are carefully curated to not only align with the school curriculum but also to inspire young minds to explore, question, and experiment. Through CNSDLI, children can delve into the fascinating worlds of physics, chemistry, biology, mathematics, and environmental science, transforming their learning journey into an exciting adventure.

CNSDLI doesn't merely stop at providing content; it pioneers a new era of interactive learning. The platform integrates cutting-edge technologies, including virtual reality and augmented reality, enabling students to visualize complex scientific concepts in a tangible and experiential manner. Through immersive simulations and interactive modules, children can grasp abstract ideas, conduct virtual experiments, and gain a deeper understanding of the scientific phenomena that surround them.

Furthermore, CNSDLI emphasizes collaborative learning and community engagement. It encourages educators, students, and scientific enthusiasts to contribute their knowledge, experiments, and innovative teaching methods, fostering a vibrant ecosystem of shared learning and creativity. By promoting collaboration, CNSDLI becomes a living, evolving platform that adapts to the diverse needs and interests of its users.

In essence, the Children National Science Digital Library for India (CNSDLI) represents a paradigm shift in the way children engage with science and learning. By offering a seamless blend of education and entertainment, CNSDLI not only enriches the educational experience but also nurtures a generation of scientifically literate, curious, and creative individuals. As we delve deeper into the transformative capabilities of CNSDLI, it becomes evident that this initiative is not just a digital library; it's a catalyst for intellectual growth, scientific exploration, and a brighter future for the children of India.

LITERATURE REVIEW

Mark E. Phillips (2019) The University of North Texas Libraries' Digital Collections are orchestrated as a bound together whole inside their shielding structure, with three separate UIs serving the substance to different groups. These various interfaces are: The UNT Digital Library (DL), The Portal to Texas History, and The Gateway to Oklahoma History. Masterminded inside each interface are gatherings, and encouraged inside these aggregations are propelled articles. One assembling, the UNT Scholarly Works Repository, unequivocally serves UNT's investigation and imaginative responsibilities and limits as the Institutional store (IR) for the University of North Texas. Since UNT Scholarly works is arranged as a gathering among different accumulations, clients can get to staff inquire about, not simply out of an enthusiasm for research from explicit employees, yet additionally as it integrates with the client's more extensive comprehension of a given point. With adaptable framework and metadata pattern that interface accumulations underneath the umbrella of the more extensive protection foundation, the UNT DL utilizes full-content looking also, interlinked metadata to strengthen and make observable the relationship between articles in different gatherings. This paper investigated how customers investigated between different accumulations inside the UNT IR, just as inside the UNT DL. Through this assessment, we watched designs between how clients explored between articles, comprehended which accumulations may have identified with each other, inspected why some extraordinary things were utilized more than others, and saw the normal number of things utilized inside a session.

Edem and Egbe (2016) considered the degree of accessibility and use of electronic assets by postgraduate understudies in the University of Calabar (UNICAL) Library, Nigeria. Five research questions and a lone theory were itemized to deal with the assessment. Realistic survey was grasped and the quantity of occupants in the examination was 2,000, 700 and twenty-six, while a case of 400 postgraduate library customers were picked through stratified looking at; 200 postgraduate

understudy each from Faculty of Education and Faculty of Science. Pearson Correlation Coefficient (r) was the quantifiable examination strategy grasped to test the hypothesis under assessment at 0.05 level of significance Three hundred and eighty-two suitably filled studies were gotten, giving a general response pace of 95.5 percent. The delayed consequence of the assessment revealed that electronic resources were open in UNICAL Library and P.G. understudies utilized them. In any case, online databases were underutilized. The University Library had e-diaries, advanced books and access to databases and Internet resources. E-diaries were the much of the time used electronic resources. Nonattendance of PC aptitudes, slow arrange, clashing web organize, control blackout and unessential electronic data assets were the issues postgraduate understudies experienced while getting to and utilizing electronic assets in UNICAL Library.

Viswanathan and Sasireka (2016) studied on the point of figuring out how to utilization of Internet as an examination instrument: an audit of figuring out how to accessible assets and clarification of understudies' needs. The investigation found that there were great online aides accessible, however that unreasonably; the better aides would in general require the best looking through abilities to find them. A couple of understudies were great, utilizing on the web support, and the dominant part felt that in the event that they had what it takes, Students needed help when they had issues or questions, as opposed to destinations that offered organized learning background. Individual help as opposed to virtual help was likewise viewed as most imperative to the understudies in this examination.

Zha et. al., (2015) characterized that portable Internet or 'versatile libraries' insinuates computerized libraries gotten to by customers through cell phones and remote frameworks. In order to research customers' allotment of portable libraries, an assessment model is made focusing on two mental components and two segments orchestrated to the versatile setting. Data assembled from cutting edge library customers who are also customers of the versatile Internet was used to test the model. The revelations show that use setting not simply legitimately influences customers' objective to grasp portable libraries, yet furthermore to some degree mediates the effect of stream contribution and inescapable relationship on use desire. In the meantime, creativity both basically impacts use point and conversely coordinates the effect of usage setting on use desire. Disclosures and recommendations for theory and practice are discussed.

Aina (2014) inspected the care, accessibility and use of electronic databases among educational staff of Babcock University, Nigeria and found that prevailing piece of respondents thought about Academic Journal 59 (69.4%), trailed by Journal Storage (JSTOR) 48 (56.5%) similarly as Dissertation and Theses and EBSCO have with 46 (54.1%) and 43(50.6%) independently. The examination in like manner revealed that predominant piece of respondents didn't think about Book cover, World Bank Open Knowledge Repository and National Virtual Library with 22 (25.9%), 28 (32.9%) and 25 (29.4) separately. He further gathers that nine out of thirteen databases under idea were averagely careful by respondents. This deduces there is need to assemble thoughtfulness regarding spread each and every electronic resource the library purchased in.

RESEARCH METHODOLOGY

The scholastic research study of this sort needs selection and arrangement of most proper and powerful research methods. Considering the requirements of the study and functional suitability and feasibility, following methods have been selected. The planning, organizing and developing Children's National Science Digital Library, calls for distinguishing the persons who will be in charge of undertakings, to plan strategies and advance the investigation of basic sciences. It is additionally fundamental for the investigation, to choose keenly the science teachers, school curators, digital library specialists and science advertisers who are assuming their individual job in the digital condition. The investigation study demands the data and information from the sources like individuals, gatherings, networks, establishments and associations. As expressed somewhere else, the survey method is used to accumulate the data for the investigation work.

While expressing the need and reason for the investigation, it was all around obviously expressed that every last one of the individuals who are the middle accomplices in the design, development, association, the board and rendering administrations were considered and a select example are taken for the assessment. It is practically a purposive inspecting strategy. The examination will be utilized an unstructured open finished questionnaire technique in which set of inquiries concentrating on the jobs and exhibitions of the agent gatherings of tests will be structured. The questionnaire will be controlled through the mail to the chose tests and answers will be looked for. So as to find the lucidity of the solutions an endeavor will be made to associate with the examples all the more regularly through sends and in certain contexts through telephone calls.

A PROPOSED CONCEPTUAL MODEL

A brisk peep in to the antiquated, medieval, current and contemporary history of India reveals that India inherits a rich history, culture, human progress, socio-financial life, and different aspects which make us distinct among the comity of nations. This history also reveals that India has made significant contributions to all walks of life, in its own particular manner. At the point when seen closely at the areas of education, science, technology, medication India's rich accomplishments and contributions are no place second rate compared to any developed and developing nations. Building the sizable of science and technology infrastructure, especially in the wake of achieving autonomy, the successive governments have found a way to develop and sustain the scientific temper as enshrined in the Constitution. The outstanding scientists, leaders, industrialists and committed band of academicians have immensely contributed for the cause of science from numerous points of view. The Government of India alongside support and collaboration from state governments as well as international organizations has made separate departments, setup institutions, science museums, agencies and centers and started number of projects, programs to successfully advance science at all levels starting from schools. The professional bodies, nongovernment organizations, media, national level laboratories have included their strength towards the advancement of this cause. In nutshell, there have been countless efforts made to ensure that the scientific temper is developed among the children, so that they establish a solid framework to the general development of India, through science and technology. This section also gives a chance to assess progress and recognize the gaps as to whether libraries can assume a role in advancing science education. The published writing and also various initiatives by government and non-government agencies did not give enough indications that have been intended to advance and advance science among children through the digital libraries established exclusively for this cause.

To harness the capability of ICT to access and convey the services to the point of need, libraries and their partnered agencies everywhere throughout the globe need to make attempts by making the state-of-the-craftsmanship digital libraries. So as to get an outline of the digital libraries made everywhere throughout the world, an extensive survey of the published writing was done dispassionately besides making a comprehensive search to see the working of existing digital libraries inside and outside India. This was also done to ensure that there is no glaring contrast in the model that the researcher is proposing in this study. As a piece of this exercise, researcher came across with some genuine examples which are some way are similar, however with regards to structure and observing are not quite the same as what is being imagined and prosed for India. Some of these examples are, ICDL, NSDL, IPL2, Intute, BUBL, INFOMINE, NSDL India, Vigyan Prasar Digital Library and several others. These examples give some insights in to issues that one have to take comprehension of and give some useful insights. While NSDL India setup by NISCAIR under an arrangement task is focused towards higher level students and offers just reading material collection and Vigyan Prasar Digital Library which is a simple website provides access to its own publications. These two have their very own limitations and may not take up or expand to suit the sort of model prosed in this study.

Considering the inputs from the prior chapters and considering the changing trends in the information technology and role of libraries, and understanding the more prominent requirement for having a digital library at the national level in India to advance and advance science among children, the accompanying theoretical model given in as Figure 1, for the Children's National Science Digital Library for India (CNSDLI) to serve as a national passage for Indian science digital resources for the students of Kindergarten to twelfth standards is proposed and presented.

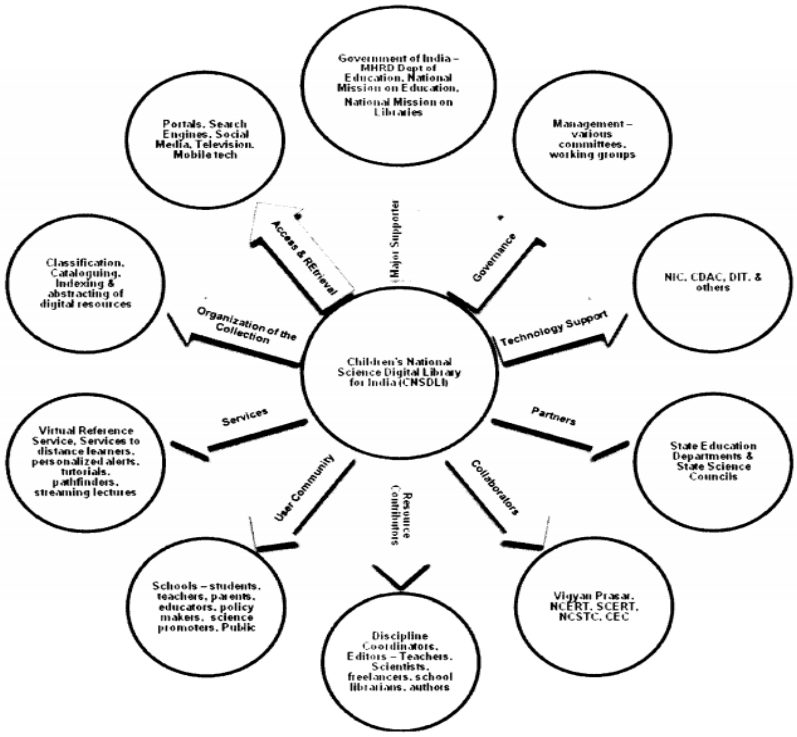

Figure 1: Proposed Model of CNSDLI

VISION OF CNSDLI

- The vision of proposed CNSDLI is to be a lively state-of-the-craftsmanship national digital library and serve as passage for preserving, advancing and accessing the Indian contributions in the field of Science and there by advancing magnificence in teaching and learning science at the school level.
- The CNSDLI will be a device for developing scientific temper among children by advancing the use of excellent science resources.
- To be a national Learning Resource Center to accomplish magnificence in teaching and learning science from Kindergarten to class Twelfth in India.

MISSION OF CNSDLI

The mission of the proposed CNSDLI is to serve as synergist apparatus to preserve, showcase the Indian science writing in digital form. It will also serve as a guide to instill scientific temper among school children through teaching and self-guided learning along these lines setting them up to arrangement with fast changing existence where science and technology has a significant role in the general development in bringing out science conscious citizens for the information society.

OBJECTIVES OF CNSDLI

To translate the above stated vision and mission, the accompanying expansive objectives are formulated for the dynamic Children's National Science Digital Library for India (CNSDLI). These stated objectives are,

1. To recognize, select, gather, arrange and give access to high caliber digital resources in the area of science featuring Indian contributions.
2. To give required strategy guidelines to developing quality collection of resources of numerous types and in various formats required for children.
3. To receive all required and broadly acknowledged international standards set for making digital libraries, so that the CNSDLI will be accessible and interoperable among other digital libraries in India and abroad.
4. To distinguish and suggest suitable technology tools for designing, developing and accessing the CNSDLI.
5. To prescribe and offer the state-of-the-craftsmanship information services based on resources gathered and the need of the user network.
6. To give personalized information services using most used technology devices, networks and social media.
7. To serve as a platform for preservation and advancement of Indian science writing
8. To go about as a compelling instructive guide to upgrade the science teaching and learning process in schools
9. To coordinate itself as a feature of science educational plan at school level
10. To make an awareness and offer Information Literacy Progranns to increase the usage of gathered resources
11. To accomplice, team up and unite on one platform all agencies, institutions, departments and individuals who have been progressing in the direction of advancing Indian science and scientific personality among children.
12. To serve as one-point access to Indian science writing implied for children.

Implementation of CNSDLI as a project

The proposed digital library is a uber movement encompassing all states. It is proposed to cover a wide range of resources in various Indian languages focusing on science disciplines in light of children as objective gathering. It is also proposed that, several agencies will be included at various level for various activities. In the first place, it is safer to accept this as a venture and start usage with task mode for the first three years. The pilot venture in the first year and following two years it will be in task mode whenever discovered worth proceeding with plan. First year It is imperative to apply the venture the board techniques and ensure the smooth execution. Contingent upon the success of pilot venture, further steps to be taken to execute the same in various phases on the off chance that the undertaking succeeds in accomplishing its set objectives inside three years, at that point it very well may be changed over in to a Center on the lines of UGC's Inter University Centers (eg. lUCAA, INFLIBNET, CEC and so on) or VIgyan Prasar of Department of Science and Technology.

Model to be adopted

So as to actualize the proposed digital library successfully, it is suggested to pursue the models in phases. It can start with a first model and move to second show when the whole venture execution ends and then it can move to the third model when the entire action takes shape as an autonomous Center;

- Incorporated input - concentrated processing and association - unified administration - distributed access (Pilot Project Phase)
- Distributed input - brought together processing and association - unified administration - distributed access (Project Phase)
- Distributed input - distributed processing and association - unified administration - distributed access (Autonomous Center)

In the first model collection of information, processing and association and the board of the whole task happens at the concentrated area. Considering that it is in task mode, usage has to be from one spot. At this stage besides overseeing in general venture usage, one can focus on resources accessible in English language and test the system from the one area. The access to the gathered

resources will be distributed which means that resources can be accessed from any point.

The second model suggests that resource collection work can be distributed among the nodal agencies situated in each state, processing and association of the same will happen at the focal area, the executives from one area will proceed and then access to the resource from any area.

The third one, which depends on the success of the previous two models, can be endless supply of the multiyear venture mode. At this point, it is normal that the entire process for making and overseeing digital library collection is tested and working admirably. At this stage, collection and processing and association of its resources can be distributed and observing of the whole activities (Center) has to be controlled from one area ie. Head Quarter of Digital Library and access as usual will be distributed. Suggesting these models is to make ready for such a steady and continuous usage, so that it will consequently lead for proportionate expansion and development of the complete system.

Services

Proposed model library would offer assortment of services to spur and advance the use of scientific writing in digitized from among children. Some of the suggested services are (Figure 2), Virtual Reference Service, make subject pathfinders (bibliographies), stream the lectures and tutorials, give personalized alerts, offer virtual preparing suites, arrange virtual exhibitions, vocation counseling, software tools, associate with virtual laboratories, encourage virtual communication with experts, help discovering information resources, make information banks containing questions and answers, give services to distant inclining, support self learning individuals. These services will be assessed every now and then and will make new services at whatever point required. A lot more services can be included by leading intermittently use and user studies. Indeed, even with the enlistment of new technology also the services can be restructured and reformed.

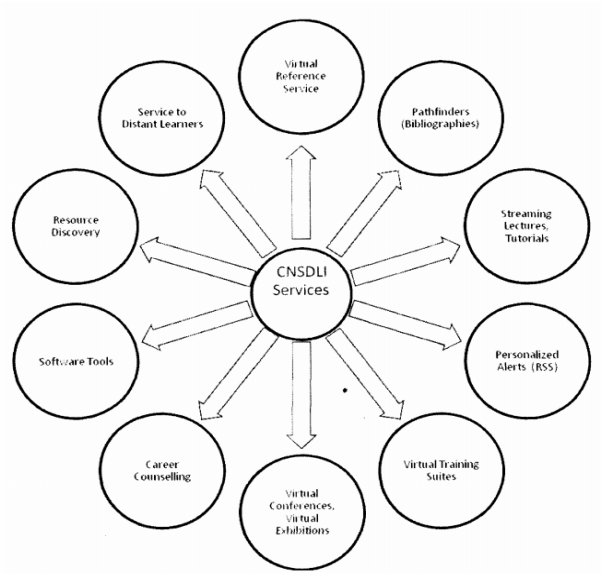

Figure 2: Information Services

Link with National and International Digital Libraries

Having made an immense investment in terms of cash and effort, this library can't work in isolation. It has established formal links with numerous other digital libraries, conventional libraries, agencies associated with advancing science inside and outside India. Therefore, it is proposed that, CNSDLI will have a close links with different libraries of similar kind established at the International level (Figure 3). This will draw expertise and at the same time elevate the library services to international users.

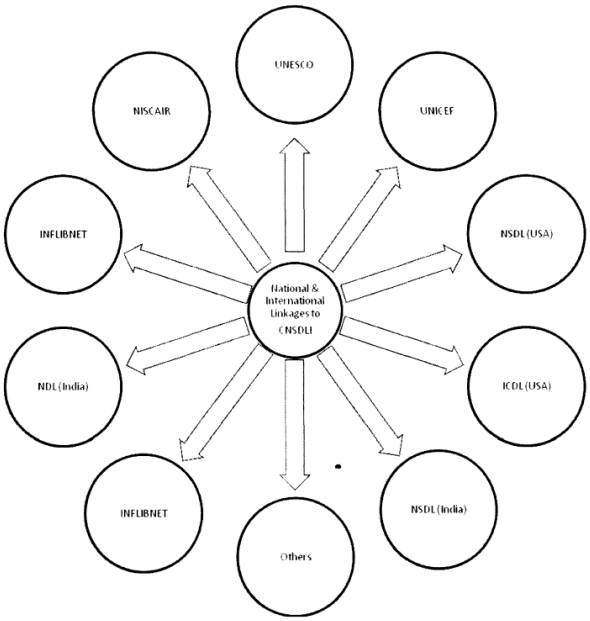

Figure 3: National and International Linkages

CONCLUSION

In conclusion, the Children National Science Digital Library for India (CNSDLI) stands as an emblem of educational innovation, breaking down barriers and illuminating the educational landscape for young minds across the nation. This revolutionary digital initiative transcends the conventional boundaries of learning, empowering children with knowledge, curiosity, and a profound understanding of the world of science.

CNSDLI's impact reverberates far beyond the confines of traditional education. By providing accessible, interactive, and engaging scientific content, CNSDLI nurtures a generation of thinkers, innovators, and problem solvers. Through its immersive virtual experiences, it not only supplements classroom learning but transforms it into an exciting journey of discovery and exploration. The integration of advanced technologies, such as virtual reality and augmented reality, catapults children into the realms of science, allowing them to visualize complex concepts and conduct experiments in ways previously unimaginable.

The collaborative spirit of CNSDLI, encouraging contributions from educators and students alike, transforms it into a dynamic, living entity. It becomes a platform not just for learning but for the exchange of ideas, fostering a community of learners where knowledge is shared, refined, and expanded upon. This collaborative ethos propels the initiative forward, ensuring its relevance and richness in content, making it a valuable resource for generations to come.

As we envision the future, CNSDLI stands as a beacon of hope and opportunity. It shapes not just knowledgeable individuals but enlightened citizens who are equipped to face the challenges of tomorrow. In the digital corridors of CNSDLI, the seeds of scientific curiosity are sown, nurturing dreams, aspirations, and a hunger for knowledge. It is a testament to India's commitment to nurturing its most precious resource: its children. With CNSDLI, India paves the way for a future where every child, armed with the power of knowledge, can dream, aspire, and achieve, contributing significantly to the scientific advancements and societal progress of the nation.

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