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RESEARCH ARTICLE

ELECTRONIC BASED CURRICULUM INFLUENCING THE RESEARCH ACTIVITIES OF THE ACADEMIC COMMUNITY-A STUDY

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ABSTRACT

An "electronic based curriculum" or e-curriculum refers to the use of electronic technologies to deliver and facilitate learning, often in a non-traditional classroom setting. This includes online courses, digital textbooks, and other educational materials accessible through electronic devices. E-curricula aim to enhance learning flexibility, accessibility, and cost-effectiveness. Networks and cloud computing is increasingly being used in libraries in Kerala, offering benefits like improved accessibility, resource-sharing, and cost-effectiveness. Libraries are adopting cloud-based solutions for tasks like managing digital resources, online catalogs, and document delivery services.

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INTRODUCTION

Network and cloud computing is increasingly being used in libraries in Kerala, offering benefits like improved accessibility,resource-sharing, and cost-effectiveness. Libraries are adopting cloud-based solutions for tasks like managing digital resources, online catalogs, and document delivery services. Cloud-based platforms enable students and faculty to access library resources from anywhere, at any time. Whether it's e- books, journals, or databases, cloud computing ensures that users are not restricted by location or time, making academic resources available 24/7. Allow users to access digital resources remotely. College libraries are getting bibliographic and full-text databases online. A digital, fully integrated curriculum is crucial for schools or college to a seamlessly transition between remote and blended learning modes. A well-selected integrated curriculum provides continuity, flexibility, and meaningful learning experiences for students whether they are learning from home or in the classroom. This comprehensive guidance will help schools make informed decisions when selecting such a curriculum

Electronic Libraries: The invention of computers, digital telecommunication technology, CD-ROMs, Multimedia, Computer Networks, and the Internet have paved the way for the development of Electronic publishing and have changed traditional libraries into Electronic/Digital libraries. Electronic libraries are global networked virtual Libraries in which all of its holdings are in machine-readable form. To provide instant information service by retrieving the required information from the midst of fast emerging and ever-growing information explosion, it is very essential to digitize the libraries. Electronic libraries, which are often called 'Digital Libraries,' denote a library in which all or virtually all of its holdings are in machine-readable form. Electronic library is a global virtual library of thousands of networked electronic libraries. They are the dynamic store houses of digitized information.

Need for Electronic Libraries and need of digital curriculum: A digital curriculum is about more than using technology in the classroom. It's about integrating digital curriculum resources into every aspect of the learning process. When a digital curriculum is designed well, there isn't even a need for a physical classroom; the entire education experience can happen in a digital space. One version of using electronic library technology is to manage large amounts of digital content, such as thousands of images or hundreds of audio clips. Another need is to perform quick searches that are difficult manually. The vast amount of information being created and stored each day makes it more difficult to find specific details later. Documents and other materials housed in collections are deteriorating at rapid rate. While much work is done to conserve and preserve collections in their original form, digitizing their contents enables it to be preserved in an additional way. In many cases, this is difficult with traditional

printed materials due to the physical limitations of library facilities and the fragility of the materials in the collection. Availability of precise and timely information is important for the benefit and progress of an individual or organization. But information is growing at an exponential rate and the amount of new information is bewildering the users. Obviously, the challenge was to make this vast and latest information available to researchers, academic communities, and another kind of users. To achieve this, it is essential to digitize the libraries.

The components of an electronic library are

- Local library systems with adequate PCs having LAN facility
- Local databases in machine-readable form, CD-ROMs, Multimedia facilities
- E-mail service
- Access to services and remote databases
- Networks including Internet facility
- Well trained manpower
- Variety of system functions to co-ordinate and manage the entry and retrieve data

Functions of Electronic Library

The key functions of electronic library are

- To manage large amounts of digital/Electronic contents such as thousands of images or hundreds of audio clips
- To enable one to perform searches that are not practical manually
- To manage content from multiple locations
- To preserve unique collections through digitization
- To enable greater access to information
- To provide means to enrich the teaching and learning environment
- To protect content owners to information
- Reduces distribution and storage overhead
- Increases user effectiveness and productivity and
- Standards are necessary for the exchange/interchange of information.

Digital Information Services Provided Through Electronic Libraries

Following are some of the electronic/Digital information services, which can be provided by Electronic libraries:

- On-line public Access catalogue (OPAC)
- CD-ROM Network Service
- On-line Circulation Transaction
- E-mail Service
- Bulletin-Board Service
- CAS (Current Awareness Service)
- SDI (Selective Dissemination of Information)
- Indexing and abstracting service

Advantage of Electronic Libraries

- Electronic libraries have tremendous capacity to store huge data
- Save a lot of space in the library
- Can be updated every minute
- Bibliographic data is fed only once
- Afford very large and multi approach searching capabilities
- Use of Boolean Operators is possible

Issues and Challenges in Developing Electronic Libraries: In the context of digital images, libraries face greater challenges in capturing, storing, formatting, retrieval, and reproduction of non-textual information. Because it is a new area of developing, sources of information and experiences are few. As the arrival of electronic libraries is imminent, libraries are forced to re-educate themselves to meet the new challenge. The principal categories of information sources are text, video, and voice. The visual representation of objects, colors, and shapes has always been an integral part of human culture.

Users Preference of Online Resources: In the present scenario, though print resources are still vital to our collection and community of users, many students prefer resources in an electronic format for certain activities such as searching within the text and quick reference information. Above all, students like e-resources due to the convenience of being able to use the resource where and when needed. Libraries need to embrace e-resources to keep up with the changing needs of our users. With many high-use materials such as books in a reserve collection, we see that print and electronic books are being well used by our students and that sometimes both print and electronic versions of a book are needed. Libraries need to embrace e-resources to keep up with the changing needs of our users, but academic libraries also need to develop flexible collection management strategies to meet their users' needs. In general, researchers are very happy with online e-resources, considering the fact that online books overcome problems peculiar to print collections. Moreover, searching in e-resources can be far more comprehensive and extend to full text, unlike searching in an OPAC where only titles are searchable.

Features of Electronic Library

Development in Telecommunication Technology: The transmission of data from one point and reception at a remote point, using wire, fiber optics, radio waves, microwaves or another medium of transmission. In association with computing, it forms the defining technology of the information age. Although traditionally associated with the transmission of voice data, telecommunication systems are now universally used for transmitting digitized data of all kinds.

Electronic Data Interchange (EDI): EDI is the method for conducting business transactions across networks, with the exchange of invoices, orders and other documentation carried out in a standardized manner between the computers of trading companies. A major objective is, by standardizing and simplifying, to shorten the time between ordering and delivery. There are thousands of companies using EDI throughout the world. The European Union supported its expansion in the mid 1990s through a number of cross border pilot projects, designed to show that it can benefit both small and large business. EDI is a critical tool for E-COMMERCE, not least in the book trade and hence in the process of library supply.

FAX (Facsimile Transmission): Fax stands for "facsimile" which means "a copy" more especially it stands for "facsimile" transmission. It was invented Alexander Baln in the year 1842.

A fax machine scans an image and sends a copy of it in the form of electronic signals over transmission lines to a receiving fax machine. The receiving machine re-creates the image on paper. A facsimile machine is a telephone copy machine. When we insert the original document into the machine the copy comes out another facsimile machine elsewhere in the world at the cost of a phone call. The two types of machines are 1) Dedicated fax 2) Fax modems.

Video Text: It is the generic name for the group of electronic communication system, which makes use of television screens to display computer-based information. It transmits text or graphics stored in computer database via the telephone network for display on a television screen. They make the database stored on powerful computer system assessable through the television set and a telephone. In order to function, videotext system needs a telephone line, to which a television is connected via electronic interface. Information is displayed as frames and each frame is identified by a unique code. Frames can be traced via their unique code or by searching, using menus or key words, depending on the system.

Tele text: Tele text is a text based information system in which the information is transmitted by the television authorities using spare lines in the television signal. The broadcast signal is received and decoded by a suitable adapted television set. The information in Tele text system is structured as a series of pages on the broadcasting organization computer. These pages are broadcast on the spare lines in the TV signal as a continuous loop of pages. The signals can be received by anyone with a television set which has been fitted with the appropriate Tele text adapter.

Video Conferencing: Video conferencing is the use of television, video, and sound technology, as well as computer technology to enable people in different locations to see, hear, and talk with one another. Video conferencing can still consist of people meeting in separate conference rooms (or) booths with specially equipped television cameras. However, modern video conferencing equipment, such as Intel's Pro share hardware and software, can be set upon people's desks, with a camera and microphone to capture the person speaking and a monitor and speakers for the person being spoken to it. It requires modems, sound and video capture cards. A relatively new development is an initiative to deliver video mail, video messages that are sent, stored, and retrieved like e-mail. One version would use the pro share windows-based video conferencing product and Oracle's media server, a computer storage system developed for movies on demand technologies.

Hypertext: A text document that contains linked to other documents and thus can be read in a non-linear fashion. Ted Neloon coined the term HYPERTEXT in 1965. A traditional text in the form of a book is typically defined as sequential or liner because there is an order in which the text must be read page two follows page one and so on. There are many advantages to this method of presenting information. It provides a logical sense of order. It can however, be an in efficient way to access large bodies of information. A variety of mechanism can speak a user's search for information within documents. For example, a book such as this one uses an index, table of contents and section headings to speed access to various bits of information. The index provides a mapping from an idea to a particular page in the document containing these related pieces of information. Non-sequential ways to access information such as footnotes, references and indexes are useful way to deal with navigating and organizing large bodies of related information. With the amount of information available for consumption, exploring an alternative to sequential access seems appropriate. This is where the idea of hypertext comes in. A hypertext document is an electronic document that contains link to related pieces of information. It could be characterized as providing generalized footnotes. It is a non-liner way to have an access to information.

Hypermedia: A generic term now widely used for multimedia applications of the HYPERTEXT principle. This permits the user to follow associative links between units of information by clinking on a HOT SPOT with a mouse. Web-delivered documents are the most familiar form of hypermedia.

Network: A network is a system of interconnected computers, telephones or other communication devices that can communicate with each other and share application and data. It provides tremendous benefits.

- Simultaneous access to critical programs & data.
- Sharing of peripheral devices, such as a printer & scanner.
- Streamlined personal communications.
- Easier backup of data.

Computer linked by a TELECOMMUNICATIONS system Networks offers two resources. First, they offer access to the people who use computer on the network, by means of ELECTRONIC MAIL, conferencing or chat facilities. Second, networks permit the use of files (text, graphics, sound and video) software, databases and peripherals (like printer or fax machines) stored on, or attached to, computers on the network.

Electronic Information Environments: An electronic environment allows changes and updating of original information, provides different views/reading of the same document, integrates multimedia sources of information, permits interchange of data and offers software support online. All these facilities while being useful for some types of publication are not appropriate for every kind of book; different kinds of reading requirement make electronic translation more or less useful for the reader.

Electronic Information Resources: Any information resource that is accessible through computers or network can be termed as electronic resources. It is also available through the Internet or through online databases. Electronic Information Resources (EIRs) originally published information in electronic form or in print form made available electronically. Electronic media has proved its advantages over the print media. Any information resource that is accessible through computer or network can be termed as electronic resources like e-journals, e-books and e-data bases have increased considerably. Computer storage devices such as optical disk, CD ROM/DVD-ROM Databases accessible through Internet and other networks can be used or stored for further use.

Analysis and Interpretations of Data: The purpose of the study was to identify the use pattern of electronic information resources in the college libraries in Kerala before the epidemic period; an analytical study. The investigator attempted to discover whether the undergraduate and postgraduate students of the arts and science colleges using the modern Information Technology which is the electronic information resources.

Table 1. Sample Population

Category	Respondent	Questionnaire Distributed	Questionnaire Returned	Response rate	Remarks
Students	600	800	678	84.75	78 questionnaires found to be invalid

Sample Population: Table 1 shows that out of 800 questionnaires distributed and 678 questionnaires were returned but 78 were found to be invalid; they were incomplete and thus rejected from the ultimate sample. A completely filled 600 questionnaires were formed the sample for the study. The investigator designed a questionnaire to obtain data necessary to examine the use of electronic information resources in the college library in Kerala. Analysis of data involves a number of closely related operations which are performed with the purpose of summarizing and organizing the collected data to find out answer to the computation of certain measure along with searching for pattern of relationship that exists among groups.

The investigator designed a questionnaire to obtain a data necessary to examine the research problem. The instrument was administered directly by the investigator to 800 students of the various colleges under the four universities in Kerala. The investigator given preference to the NAAC accredited arts and science colleges because those colleges have more facilities than that of the non-accredited colleges. This data has been analyzed, summarized and presented in tables using totals and percentages. SPSS was used for producing descriptive statistics. This chapter presents the analysis of data providing a descriptive examination of general characteristics of respondents, their use pattern of electronic information available in their college library and the detailed analysis of their responses on electronic information resources, services tools, techniques and their facilities.

General Characteristics of the Population: The general characteristics of respondents include Gender, Under graduate or Post graduate, Name and address of the college, Type of Management (Government or Private), Location, Financial Nature (Government, Aided, Unaided) NAAC accreditation are selected.

Gender: The gender wise distribution of respondents selected for the study is given in the table 1.1. For getting suitable results the final year UG and PG students are taken because the first years does not have sufficient skills for using the electronic information resources.

Table 2. Gender wise distribution of students

Gender	Number	Percent
Male	306	51.0
Female	294	49.0
Total	600	100.0

The result shows that the sample of 306(51%) male and 294(49%) female students responded about the questionnaire issued to them. Since the majority of the students were male, slight male dominancy can be seen in the sample.

Course: The course means which course the students undergoing whether it is graduate or post graduate class. The table 1.2 describes the result of the analysis based upon the course of study.

Table 3. Course wise distribution of the students

Course	Number	Percent
Undergraduate	354	59.0
Postgraduate	246	41.0
Total	600	100.0

The table 3 shows that an average of 354 (59 Percent) undergraduate and 246(41 Percent) postgraduate responded about the questionnaires that distributed. Among the respondents undergraduates are more than the PG students.

Information about the College Library

Table 4 Type of Management of the college (Course wise)

Course being undertaken		Type of management		Total
		Government	Private	
Undergraduate	Count	120	234	354
	% within Course	20	39	59
Postgraduate	Count	156	90	246
	% within Course	26	15	41
Total	Count	276	324	600
	% within Course	46	54	100

The table 4 shows that 120(20 Percent) under graduate students participated this survey are from government college and 234(39 Percent) undergraduate students are from private colleges. Whereas 156(26 Percent) Post graduate students come from government colleges and 90(15 Percent) PG students are from private colleges. The table shows majority of the students participated this survey is from private college that is 324(54 Percent).

Availability of Electronic Information Resources

Availability of Internet facility in the college library (Gender Wise): Internet through the World Wide Web technology entertains the user communities to retrieve hyper media information and leaves a wide scope of information from a large universe of documents. An internet connection is need for the college library for getting new knowledge to the students in the modern IT era especially in the epidemic periods.

Table 5. Availability of Internet facility in the college library (Gender Wise)

Availability of Internet facility in the library	Gender		Total
	Male	Female	
Available	120	84	204
	20%	14%	34%
Not available	186	210	396
	31%	35%	66%
Total	306	294	600
	51.00%	49.00%	100.00%

As per the table 5shows that 120(20 Percent) male and 84(14 Percent) females opine that they have internet facility in their college library. Whereas 186(31 Percent) male and 210(35 Percent) females' students opine that they have no internet facility. This shows that most of the colleges have no internet facilities.

Table 6. Availability of Internet facility in the college library (Course Wise)

Availability of Internet facility in the library	Course		Total
	Undergraduate	Postgraduate	
Available	96	108	204
	16%	18%	34%
Not available	258	138	396
	43%	23%	66%
Total	354	246	600
	59.00%	41.00%	100.00%

As per table 6, 96(16 Percent) undergraduate students commend that their college have internet facility and 108(18 Percent) PG students have the same opinion. Whereas 258(43 Percent) undergraduates and 138(23 Percent) postgraduates opines that they have no internet facility.

Visiting of the Internet café in the absence of Internet Facility in the College: The 396 students said that their college has no internet facility, so whether they are visiting the internet café for browsing the internet. To this opinion is analyzed in this table 1.22

Table 7. Visit of Internet cafe in the absence of Internet facility in the college library

Opinion	Gender		Total
	Male	Female	
Yes	202	176	378
	51.5%	44%	95.5%
No	12	6	18
	3%	1.5%	4.5%
Total	214	182	396
	54.5%	45.5%	100%

Table 7shows that 202 (51.5 Percent) male students and 176(44 Percent) females that is the grand total of 378 (95.5 Percent) students are visiting the internet café, were as 12(3 Percent) male students and 6(1.5 Percent) females grand total of 18 (4.5 Percent) students are not visiting the internet café. As per the table no: 1.21 204(34 Percent) students using internet and their college have internet facility and as per this table 378 (95.5 Percent) are visiting internet café, that is the grand total of 204+378=582(97 Percent) students are using the internet. Only 18 (3 Percent) students are not visiting the internet because the absence of experience and chance. Majority of the students are using internet for acquiring knowledge in the changing environment especially in the epidemic periods.

Purpose of Using Internet: For measuring the use of electronic information the respondent are asked to mark the priority of the use of Internet, Whether it is for Academic purpose, searching jobs, chatting, accessing online journals. The table below shows the details.

Table 8. Purpose of using Internet

Purpose	Number	Percent
Academic Purpose	366	61.0
Searching Job	198	33.0
Chatting	18	3.0
Accessing online-journal	18	3.0
Total	600	100.0

As per the table no 8 an average 366(61%) students given first priority for using the internet for academic purpose and 198 (33%) for searching jobs, 18(3%) students for chatting and 18(3%) for accessing online journals. Most of them given the first priority for using the internet for academic purpose because they can acquire current knowledge, information about seminars, examinations, articles can be get or easily accessible from the internet.

Table 9. Purpose of using the Internet (gender-wise)

Purpose	Gender		Total
	Male	Female	
Academic Purpose	168	198	366
	28%	33%	61.00%
Searching Job	138	60	198
	23%	10%	33.00%
Chatting	0	18	18
	0	3%	3%
Accessing online-journals	0	18	18
	0	3%	3.00%
Total	306	294	600
	51%	49%	100.00

The table 9 shows that 168(28 Percent) male students given first priority for Academic purpose, 138 (23 Percent) searching jobs, as the same time 198(33 Percent) females gives importance to academic purpose and 60(10 Percent) gives priority searching jobs, 18(3 Percent) for chatting and 18(3 Percent) gives importance for accessing the online journals. For both male and females students are using the internet more for the academic purpose and searching the job and only female students using internet for chatting as well as accessing the online-journals.

Table 10. Purpose of using the Internet (course-wise)

Purpose	Course		Total
	Undergraduate	Postgraduate	
Academic Purpose	192	174	366
	32%	29%	61%
Searching Job	144	54	198
	24%	9%	33.00%
Chatting	18	0	18
	3%	0.00	0.03%
Accessing online-journals	0	18	18
	0	3	3.00
Total	354	246	600
	59%	41%	100%

The Table 10 shows 192(32 Percent) undergraduates gives importance of using internet for academic purpose, 144(24 Percent) for searching jobs, 18(3 Percent) for chatting whereas 174(29 Percent) post graduates used internet for academic purpose 54(9 Percent) for searching jobs 18(3 Percent) for accessing online journals.

Rating of the Information Retrieved from the Internet: Internet is the prime source for accessing the electronic information scatter throughout the world. There is a question asked to the respondent whether the information accessed through the internet is accessible, accurate, authoritative and ease of use. The table 1.26 shows this

Table 11. Accessibility of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	34	242	78	354
	5.6%	40.3%	13%	59%
Postgraduates	55	164	27	246
	9%	27.3%	4.5%	41%
Total	89	406	105	600
	14.83%	67.67%	17.50%	100%

The table 11 describe 34(5.6 Percent) undergraduate students said the information accessed through internet is excellent, and 242(40.3) said it is good and 78 (13 Percent) commends it is poor. According to the post graduates 55(9 Percent) said it is excellent and 164(27.3 Percent) said it is good and 27(4.5 Percent) said it is poor. Majority of the student opinion that the information accessed through internet is good for their academic purpose that is 406(67.67 Percent).

Table 12 Accuracy of Internet Information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	12	252	90	354
	2%	42%	15%	59%
Postgraduates	0	216	30	246
	0.00	36%	5%	41%
Total	12	468	120	600
	2.00%	78.00%	20.00%	100%

The question asked to the respondent whether information accessed through internet is accurate. A sum total of 12(2 Percent) undergraduates said that the information accessed is excellent whereas 252(42 Percent) student said it is good and 90(15 Percent) said it is poor. For evaluating the same case about the post graduates a sum total of 216 (36 Percent) said it is good. Most of them opine that the information accessed through internet is good and they are getting the required information from the internet.

Table 13 Authoritative nature of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	12	282	60	354
	2%	47%	10%	59%
Postgraduates	30	126	90	246
	5%	21%	15%	41%
Total	42	408	150	600
	7.00%	68.00%	25.00%	100%

As per the table 13 shows undergraduates 12(2 Percent) said the information accessed through internet is excellent and 282(47 Percent) said it is good and 60(10 Percent) said it is poor. Considering the same opinion 30(5 Percent) PG students said the information accessed through internet is excellent and 126(21 Percent) said it is good and 90 (15 Percent) said it is poor. A majority 68 Percent students said that the information accessed through internet is authoritative and reliable in nature and it is helpful for their academic and research work.

Table 14. Consistency of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	18	288	48	354
	3%	48%	8%	59%
Postgraduates	6	198	42	246
	1%	33%	7%	41%
Total	24	486	90	600
	4.00%	81.00%	15.00%	100%

Table 14 describes that are 18 (3 Percent) under graduates said they are getting consistent information from the internet and it is excellent in performance and 288(48 Percent) students said it is good and 48(8 Percent) said it is poor. Most of the students 486(81 Percent) opine that the information accessed is good. Only a negligible 90 (15.00 Percent) students said it is poor.

Table 15. Ease of use of Internet information (Course Wise)

Course	Excellent	Good	Poor	Total
Undergraduates	54	168	132	354
	9%	28%	22%	59%
Postgraduates	6	192	48	246
	1%	32%	8%	41%
Total	60	360	180	600
	9.16%	60%	30%	100%

The table 15shows 54 (9 Percent) undergraduate said that they have no problem while accessing the internet, they commends that their use of internet is excellent, whereas 168(28 Percent) said that their use of internet is good, but 132 (22 Percent) said it is poor. For considering the opinion of postgraduates, they commends 192 (32 Percent) said that their use of internet and its result is good, but 48 (8 Percent) said that the internet information accessed is poor. Majority opines, the information accessed through internet is easily accessible and useful and its search with search engines is easy for finding or locating the required knowledge that is not getting elsewhere.

Difficulties faced while accessing the Internet: The respondents are asked whether they have any difficulties faced while accessing the internet that is for obtaining connection, opening WebPages, browsing, downloading, outdated or backup information etc.

Table 16. Difficulties faced while accessing the Internet (Course wise)

Course	Difficulty in obtaining Internet connection			Total
	No	A Little	High	
Undergraduates	72	270	12	354
	12%	45%	2%	59%
Postgraduate	60	168	18	246
	10%	28%	3%	41%
Total	132	438	30	600
	22%	73%	5%	100%

As per the table 16 states that the 72(12 Percent) undergraduates said that they have no difficulty in obtaining internet connection but 270(45 Percent) said some difficulties faced 12(2 Percent) said that they have serious difficulties faced while accessing the internet connection. For considering the case of the post graduates 60(10 Percent) have no difficulties obtained while accessing the internet here as 168(28 Percent) have some difficulties and 18(3 Percent) have faced high difficulties while facing the internet. A majority 73 percent student said that they are facing some difficulties while accessing the internet in the Epidemic periods.

CONCLUSION

The dramatic changes and exponential growth of technologies change the face of the society, especially in the field of library service. The world has witnessed important changes particularly in Information Technology (IT) has brought a revolution in every sphere of life. Information Technology enabled library services have not only observed remarkable changes in their daily operations, but also identified a new and active role for librarians. Automation or computerization is an important application of IT in libraries. It facilitates speedy library operations, services, to access and delivery of information.

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