PRESERVATION AND CONSERVATION OF LIBRARY MATERIALS IN SELECTED STATE-OWNED ACADEMIC LIBRARIES OF THE 21ST CENTURY: RECENT INSIGHTS AND THE ROLE OF LIBRARIANS

BY

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Abstract

The study ascertained the availability, forms and factors causing deterioration, extent of adoption of digital preservation techniques and the hindrance to preservation of library materials in tertiary institutions' libraries in Delta State. The objective of the study determined the availability of library materials, forms of deterioration, factors that caused deterioration, preservation techniques, extent of adoption of digital preservation techniques, extent of adoption of digital preservation techniques and the constraints to the successful implementation of preservation and conservation of library materials. The study comprised librarians and para-professional library staff. Descriptive survey was employed and questionnaire used for data collection. Results revealed that majority of the library materials available were dictionaries, encyclopedia, textbooks, periodicals, computers, CD-ROM and e-materials. Computer virus attack on software and file, breakdown of ICT equipment and book mutilation were the major forms of damage on library materials. The high frequency of usage of the so limited materials, flagging library building and wear and tear were the pivotal factors causing deterioration. In response, dusting/cleaning, proper shelving, and the presence of physical security guide (i.e. porter) were mostly used to preserve the materials. Apparently, there was a remarkably low adoption of recent digital preservation techniques as it was constrained by lack of a good funding system, firm preservation and conservation policies and guidelines and poor electrical power supply. The speedy intervention of parent bodies and library management is sought.

Keywords: Preservation, conservation, deterioration, academic library, librarian

Introduction

This is the world of the 21st century, the era of information explosions and measures must be put in place for achieving sustainability of the library materials in their original format. The preservation and conservation of library materials became necessary as a result of their deterioration, which is the basic problem of libraries in this 21st century and librarians must quickly tackle this in their day to day running of the library operations. Library materials need to be preserved and conserved to ensure the longevity of the materials as they are often consulted by users. The American Institute

for Conservation (AIC, 2006) defines conservation as the reducing or preventing damage in order to extend the life span of the materials while preservation is the physical treatment of the materials itself when damage has occurred. The preservation and conservation of library collections from deterioration is greatly the responsibility of the librarians and all the activities involved both before and after the deterioration of the materials. The rate of deterioration of the materials has become a major problem facing libraries and librarians throughout the world (National Library of Australia, 2004).

The place of library in the 21st Century

Library being repository of knowledge is charged with the responsibility of information dissemination that is vital to national development (Sahoo, 2004). The holdings of every library are referred to as the heritage of mankind that is treasured and valued; therefore they must be well preserved and conserved. The 21st century is characterized by innovation and creativity and librarians play important role in creating innovative services to users as well as to the materials in the library. The library materials range from print, non-print, visual, audio etc. and they are in variety of shapes, sizes and formats which normally present problem in terms of storage and accessibility. Materials like computers, film, cartridges, cassettes, recorders, multi-media kits can be very difficult to manage in shelving and control. Oluwaniyi (2015) stated that library material can be grouped into print, non-print and e-materials that could be archived in the libraries. These physical materials, reference and non-reference materials such as dictionaries, encyclopedia, books, newspapers, textbooks, periodicals, journals, proceedings, and magazines are printed materials. Non-prints such as audio-visuals, film strips, television, cassettes, and micro films are not reliant on printing process. The e-resources include software application, storage devices (hard disks, CD ROM, DVD). The accessibility of these materials and frequent utilization by users lead to a gradual deterioration of the materials. This indicates that preservation and conservation of library materials is nurtured as a necessity for librarians and crucial practice to be upheld in various libraries.

Research Questions

This study would provide answers to the following research questions.

1. What are the various library materials available for consultation in libraries?
2. What are the forms of deterioration prevailing in the libraries?
3. What are the factors that cause deterioration of library materials?
4. What are the preservation techniques in place to prevent library materials from damaging?
5. What is the extent of adoption of digital preservation techniques in the libraries?
6. What are the constraints to the successful implementation of preservation and conservation of library materials in the 21st century libraries?

Literature Review

The word preservation and conservation have been used interchangeably to mean the same. Sawant (2018) pointed out the importance of preserving and conserving library materials and involved over all activities geared towards the maintaining, archiving and use of the materials. Preservation of library materials cover activities that are involving the protection of vital materials that are archived online from unauthorized distribution, unveiling and indiscriminate use that may have damaging profiling effect which is popularly called the "Privacy Act". Preservation and conservation of library materials may be carried out using different techniques such as binding and lamination, reprography, constant cleaning, shelving, dusting, insecticidal, fumigation, boxing and encasement, digitization of the materials (Caswell-Oslon, 2019; France, Thurn, & Schmeids, 2012; Oluwanyi, 2015). These techniques are carried out as result of certain factors that cause deterioration to library materials (Iyishu, Nkanu, & Ogar, 2013; Olorunfemi, 2015; Kaur, 2017). The factors are classified into external and inherent, the external factors include harsh climate, natural disasters such as flooding, fire outbreak, pest infestation, microbial decomposition of paper and dust while the inherent factors include acid degradation of paper. Other factors may be human such as theft and vandalisation, lack of air conditioning cold storage (Ajala & Oyeboade, 2008). The effective preservation and conservation of library materials might be hindered by factors like poor funding, poor electricity, lack of trained personnel, lack of preservation skills, and maintenance culture by the library management (Ogunmodede & Ebijuwa, 2013).

The nature of library materials collected and used determines the form of preservation to prolong the lifespan of the materials. The 21st century libraries must start utilizing advanced technology in innovating and creating modern means of preserving and conserving library materials where materials and virtual information resources are made available at the same time for use (Wenborn, 2018). Digitalization of library materials is an innovative procedure that is used in preserving metadata and digitized information for quick access in remote area; reduce mutilation and over use of library materials. Digitization is no longer an emerging technology; it is established and often preferred method for reformatting. Therefore, digital preservation must be put in place and held at high esteem for sustainability of library materials in this 21st century.

Methodology

The study adopted the descriptive survey design and the population of the study was made up of all librarians and para-professional library staff. This consisted of librarians in Delta State University Libraries (Abraka and Anwai-Asaba), Delta State Polytechnic Libraries (Ogwashi-uku and Ozoro) and College of Education Libraries (Warri and Agbor). The questionnaire was the instrument used for data collection. A total of 111 questionnaires were administered and returned which were used for the study. The questionnaire was divided into six sub sections A–G. Section A, demographic information; Section B, availability of library materials; Section C sought for forms of deterioration of library materials; Section D; sought for factors that led to the deterioration of library materials; Section E elicited preservation techniques used for library materials, Section F looked into the extent of adoption of modern digital preservation techniques, and lastly Section G ascertained the possible challenges to preservation of library materials. From the instrument collected, total of 98

questionnaires (88.3%) were retrieved and found useable. Data were analyzed using descriptive statistics of means, standard deviations, percentages and frequency counts.

Result and Discussion

Table 1 shows the Demographic Characteristics of the Respondents.

Variable	Category	Frequency	Percentage
Gender	Male	58	59%
	Female	40	41%
Status of librarians	Para-professional	64	65%
	Professional	34	35%
Working Experience	1 – 10 years	37	38%
	11 – 20 years	41	42%
	21 – 30 years	14	14%
	No-response	6	6%

Findings show that both genders participated in the study. The male; 58(59%) were more than female; 40(41%). Respondents were made up of para-professional library staff 64 (65%) and were more than the librarians; 34 (35%). Thirty seven (38%) of the respondents had 1 – 10 years of working experience in the library, 41(42%) had 11 – 20 years of working experience while 6 (6%) did not indicate the number of year working experience as a worker in the library. These shows that majority of the respondents had between one to twenty years working experience in the library department.

Table 2: Availability of Library Materials in Three (3) Tertiary Institutions' Libraries

Library materials	Available	%	Don't certainly know	%	Not available	%	Mean	SD	% response
Journals	96	98.0	0	0.0	2	2	2.96	0.28	98.6
Encyclopedia	90	91.8	0	0.0	8	8.2	2.84	0.55	94.6
Graduate Thesis/Dissertation	68	69.4	10	10.2	20	20.4	2.49	0.82	83.0
Conference Proceedings	90	91.8	2	2.0	6	6.1	2.86	0.5	95.2
Magazine (Foreign and Locals)	81	82.7	10	10.2	7	7.1	2.76	0.58	91.8
Textbooks (Print)	98	100.0	0	0.0	0	0.0	3	0	100.0
Newspapers/Newsletters	76	77.6	13	13.3	9	9.2	2.68	0.64	89.5
Dictionaries	92	93.9	4	4.1	2	2.0	2.92	0.34	97.3
Gazettes/Government publications	54	55.1	31	31.6	13	13.3	2.42	0.72	80.6
Audio-visual materials	26	26.5	38	38.8	33	33.7	1.92	0.78	64.0
Undergraduate Research	93	94.9	5	5.1	0	0.0	2.95	0.22	98.3
e-library resources	65	66.3	12	12.2	21	21.4	2.45	0.83	81.6
Media resources	15	15.3	25	25.5	58	59.2	1.56	0.75	52.0
Weighted mean	72.6	74	11.4	12	14	14	2.60	0.54	86.7

Captions: Available (3.0 – 2.5), Don't certainly know (2.49 – 1.5), Not available (1.49 – 1.0), N = 105, Criterion mean = 2.00, Percentage (65%), N = 98, SD = Standard Deviation.

Table 2 shows the library materials that were available in the three (3) tertiary institutions' libraries used in the study. It was found that the most available library materials included Journals, encyclopedia, thesis and dissertations, textbooks, dictionaries, newspapers, magazine, project works, proceedings and e-resources in a range of 91% to 100% availability. Library materials such as media resources (52%) and audio visual materials (64%) were the least available library materials seen in the three (3) tertiary institutions' libraries of study. This places the overall availability of library materials at 86.7% with a mean of 2.60 (SD = 0.54) as required by the NUC (National Universities Commission).

Table 3: Forms of Deterioration of Library Materials

Forms of Deterioration	Very often	%	Occasionally	%	Never	%	Mean	SD	% Response	Rating
Computer system virus attack on files	52	53.1	42	42.9	4	4.1	2.49	0.58	83.0	1st
Book mutilations	42	42.9	50	51.0	6	6.1	2.37	0.60	78.9	3rd
Destruction of books spine	45	45.9	43	43.9	10	10.2	2.36	0.66	78.6	4th
Physical theft/book loss	9	9.2	75	76.5	14	14.3	1.95	0.48	65.0	6th
Breakdown of ICT	56	57.1	25	25.5	17	17.3	2.40	0.77	79.9	2nd
Torn books	48	49.0	24	24.5	26	26.5	2.22	0.84	74.1	5th
Vandalismof infrastructure	4	4.1	12	12.2	82	83.7	1.20	0.50	40.1	6th
Weighted mean	37	37.3	39	39.5	23	23.2	2.14	0.63	71.4	Occasionally

Captions: Very Often (3.0 – 2.5), occasionally (2.49– 1.5), Never (1.49– 1.0), Criterion mean and percentages = 2.00 (65%), N = 98, SD = standard deviation

Computer virus (83%) frequently attacking the available systems, breakdown of ICT (79.9%), destruction of book spine (78.6%) and mutilation (78.9%) were identified as most frequent forms of deterioration. The least were vandalism (40.1%), torn books (74.1%) and theft (65%). The possible reason for the low rate of theft and vandalism may be as a result of the strong security outfit in place in most libraries and effectiveness of the library porters at work place.

Table 4 reveals factors that cause deterioration of library materials and it shows that only few (mean= 1.84, SD= 0.71, 61.3%) of the listed factors caused deterioration of the library materials.

Table 4: Factors that Cause Deterioration of Library Materials

Factors	Yes	%	Not exactly sure	%	No	%	Mean	SD	% Responsive	Rating
High air temperature	20	20.4	30	30.6	48	49.0	1.71	0.79	57.1	8th
Natural disaster e.g. flood, fire outbreak	10	10.2	14	14.3	74	75.5	1.35	0.66	44.9	11th
Chemical nature of materials	12	12.2	54	55.1	32	32.7	1.8	0.64	59.9	5th
High frequency of usage	70	71.4	12	12.2	16	16.3	2.55	0.76	85.0	1st
Particulate organic matter/dust	30	30.6	11	11.2	57	58.2	1.72	0.91	57.5	7th
Insect infestation e.g. weevil, cockroach, termites	18	18.4	39	39.8	41	41.8	1.77	0.74	58.8	6th
Wear and tear from reprography	20	20.4	66	67.3	12	12.2	2.08	0.57	69.4	3rd
Rodents attack	12	12.2	36	36.7	50	51.0	1.61	0.7	53.7	9th
Improper shelving	8	8.2	21	21.4	69	70.4	1.38	0.63	45.9	10th
Library building infrastructure	35	35.7	41	41.8	22	22.4	2.13	0.75	71.1	2nd
Structural deficiencies like leakages from roof	27	27.6	42	42.9	29	29.6	1.98	0.76	66	4th
Microbial/biota deposition	18	18.4	60	61.2	20	20.4	1.98	0.63	66	4th
Weighted mean	23	20.4	36	36.2	39	40.0	1.84	0.71	61.3	

Caption: Yes (3.0 – 2.5), Not exactly sure (2.49 – 1.5), No (1.49 – 1.0), Criterion mean = 2.0, Percentage (%): 65, N = 98, SD = standard deviation

The most frequent causes of deterioration as shown from the study were high frequency of usage of library materials (mean = 2.55, SD = 0.76, 85%), followed by the nature of library building (mean = 2.13, SD = 0.75, 71.1%) and wear and tear (mean = 2.08, SD = 0.57, 69.4%) probably from photocopy. The least factor that causes deterioration of library materials were natural disaster (44.9%, mean = 1.35) and improper shelving of books (45.9%, mean = 1.38) which seem not to be of any threat. This study corroborated with Oluwaseun et al. (2017) and Odu (2017) findings on causes of deterioration of library materials in some academic libraries.

Table 5: Preservation Techniques used for Library Materials

Factors	Very often	%	Occasionally	%	Never	%	Mean	SD	% Response	Rating
CCTV surveillance	3	3.1	22	22.4	73	74.5	1.29	0.52	42.7	15th
Microfilming	21	21.4	30	30.6	47	48.0	1.73	0.79	57.8	10th
Boxing/casing in carton	20	20.4	23	23.5	55	56.1	1.64	0.8	54.8	11th
Cold storage of library building	27	27.6	53	54.1	18	18.4	2.09	0.67	69.7	6th
Filmed encapsulation	17	17.3	26	26.5	55	56.1	1.61	0.77	53.7	12th
De-acidification of papers	4	4.1	20	20.4	74	75.5	1.29	0.54	42.9	13th
Physical security	65	66.3	21	21.4	12	12.2	2.54	0.71	84.7	3rd
Dusting and cleaning books	73	74.5	21	21.4	4	4.1	2.7	0.54	90.1	1st
Fumigation of the library	27	27.6	38	38.8	33	33.7	1.94	0.78	64.6	8th
Binding	25	25.5	61	62.2	12	12.2	2.13	0.6	71.1	5th
Reprography	16	16.3	51	52.0	31	31.6	1.84	0.68	61.2	9th
Burglary protection	40	40.8	37	37.8	21	21.4	2.19	0.77	73.1	4th
PH testing of materials	5	5.1	13	13.3	80	81.6	1.23	0.53	41.2	16th
Lamination of sheets	32	32.7	40	40.8	26	26.5	2.06	0.77	68.7	7th
Proper shelving/arrangement of books	70	71.4	23	23.5	5	5.1	2.66	0.57	88.8	2nd
Access control	10	10.2	26	26.5	62	63.3	1.47	0.68	48.9	14th
Weighted mean	28	29.0	31	32.2	38	38.8	1.90	0.67	63.4	Occasionally

*Caption: Very often (3.0 – 2.5), occasionally (2.49 – 1.5), Never (1.49 – 1.0), Criterion mean = 2.0, Percentage (%), 65, N = 98, SD = standard deviation

Table 5 shows that majority of the respondents (90.1%) applied dusting and cleaning of books as preservation techniques for library materials. This is followed by proper shelving (88.8%), Physical security checks of library materials (84.7%). Others included burglary protection (73.1%), cold storage (69.7%) and binding (71.1%). The least preservation techniques used for library materials as indicated by most respondents were boxing (53%), encapsulation (47%) access control (46%), CCTV surveillance (42.7%), de-acidification (42.9%) and pHtesting (41.2%) as shown in Table 5. The number of preservation techniques adopted was found to be low (mean = 1.90, SD = 0.67,

63.4%).The most preferred were found to be easy to adopt or could be implemented without too much bureaucracy or stress. These results are similar to that Ogunmodede and Ebjiuwa (2013).

Table 6: Extent of Current Digital Preservation Techniques

Digitization Means	HE	%	ME	%	LE	%	NE	%	Mean	SD	% response
Refreshing	10	10.2	46	46.9	37	37.8	5	38.5	2.62	0.74	65.6
Migration	16	16.3	12	12.2	48	49.0	22	50.0	2.22	0.98	55.61
Digitization for repository	8	8.2	27	27.6	48	49.0	15	50.0	2.18	0.91	54.6
Emulation	9	9.2	11	11.2	49	50.0	29	51.0	2	0.89	50
Copy duplication of files	22	12.2	47	58.2	18	18.4	11	18.7	2.82	0.91	70.41
Digital encapsulation	10	10.2	34	34.7	45	45.9	9	46.9	2.46	0.8	61.48
Mean	12	12.8	29	32.0	41	41.8	15	42.7	2.38	0.87	59.61

*Caption: HE (high extent) 4.0 – 3.50, ME (moderate extent) 3.45 – 2.50, LE (lowest extent) 2.49 – 1.5 and NE (no extent) 1.49 – 0.00, Criterion mean = 2.5, percentage = 62.5%, N = 98.

Table 6 shows extent of adoption of digital preservative techniques on library materials is below expected mean percentage (59.6%, mean = 2.38). The possible reason may be due to low usage and knowledge of the technique. The modern digital preservation technique mostly used was the copy duplication with 70% (mean = 2.82, SD = 0.91), and refreshing (65.6%, mean = 2.62, SD = 0.74). The least used were emulation and repository with 50% (mean = 2.0, SD = 0.89) and 54.6% (mean = 2.18, SD = 0.91) responses respectively.

Table 7: Hindrances to Preservation of Library Materials

Factors	Yes	%	Neutral	%	No	%	Mean	SD	%	Scale of impact
1. Poor funding	48	49.0	23	23.5	27	27.6	2.21	0.85	73.81	2nd
2. Harsh tropical climate	23	23.5	20	20.4	57	58.2	1.67	0.83	55.78	8th
3. Shortage of e-infrastructure	28	28.6	18	18.4	52	53.1	1.76	0.87	58.5	6th
4. Lack of skilled personnel	24	24.5	48	49.0	26	26.5	1.98	0.72	65.99	3rd
5. Poor electricity supply to keep libraries below room temperature	46	46.9	27	27.6	25	25.5	2.21	0.83	73.81	2nd
6. Obscurity in understanding materials used for production of items	18	18.4	42	42.9	38	38.8	1.8	0.73	59.86	5th
7. Lack of policies and guidelines on preservation	51	52.0	32	32.7	15	15.3	2.37	0.74	78.91	1st
8. Structural administrative deficiencies	26	26.5	38	38.8	34	34.7	1.92	0.78	63.95	4th
9. Lack of commitment from library staff	18	18.4	36	36.7	44	44.9	1.73	0.75	57.82	7th
10. Inadequacy of dedicated staff for preservation and conservation	25	25.5	38	38.8	35	35.7	1.8	0.82	59.86	5th
11. Obsolete teehnology	28	28.6	34	34.7	36	36.7	1.92	0.81	63.95	4th
Weighted means	30	31.1	34	33.0	36	36.1	1.94	0.79	64.8	

Caption: Yes (3.0–2.5), Neutral (2.49–1.5), No (1.49 – 1.0) Criterion mean (%), 2.00 (65), N = 98

Problems that Militate Against the Practices of Preservation and Conservation of Library Materials

Table 7 reveals problems that hinder the successful implementation of preservation and conservation of library materials. The top ranked problems that militate against the practices of preservation of library materials were lack of policies and regulations for preservation (78.9%)poor electricity and poor funding (73.8% each). Others high ranked problems include skilled man power on special preservation (66%), obsolete technology (63.9%) and lack of dedicated staff (59.8%). The lowest ranked problem factors like harsh weather, lack of commitment from staff, shortage of e-infrastructure since they does not seem to hinder so much. The findings corroborated with Ogunmodede and Ebjiuwa (2013), Olatokun (2008) and Kaur, (2017) study on hindrances to preservation of library materials.

Conclusion

In recent years, academic libraries have been making effort to put in place measures for achieving sustainability of library materials from deterioration. The study x-rayed the availability of library materials, factors that caused the deterioration, preservation technique used, extent of adoption of modern preservation techniques and hindrances to preservation of library materials were highlighted. Summarily, the level of adoption of digital preservation was still low especially with the deterioration of e-library materials, use of computer application which are often damaged by virus. It must be said that with the advance in information and communication technology (ICT), the 21st century libraries must rise up to the challenges of employing a digital librarians who are ready to learn new skills for proper implementation of modern digital preservation techniques on library collections to overcome deterioration.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Librarians should be ready to train and retrain on the use of modern digital preservation techniques.
2. The library management should ensure the provision of fund for implementation of modern digital preservation techniques.
3. Librarians should ensure that preservation practices are in place in their library to avoid deterioration of library materials.
4. The parent institutions with other concerned bodies must support and enhance preservation policies and guidelines on preservation.

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