

# Study Spaces and Environments: Recognizing the Needs of Students in Africa

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## Abstract

This study looks at the satisfaction of tertiary students with their institution's library services with the aim of identifying study and learning related impediments and challenges faced by students from poor backgrounds. A study of this type is important because educators need to understand that information technology adoption and implementation must first address learning needs and situations facing emerging communities. The purpose of the study was to ascertain the reasons for visiting the library, frequency of visits, reasons that may have prevented visits, and to determine satisfaction and experience of users. This was purely quantitative study, based on a survey of students. Satisfaction levels were measured across 20 indicators adapted from similar studies and sought information on the rate of library usage, the main reason for the most recent library visit and reasons that had ever prevented them from visiting the library. Post survey, three focus group sessions were conducted to discuss issues relating to home study environments and the preliminary findings of the survey. Based on the item groupings, five service dimensions were identified. These were student services/facilities, staff, collection, study spaces, and availability (access). The study found that there was some disconnect between student needs and library services available. A large number of students (47%) indicated that they prefer to conduct their study in the library, despite indicating a high level of dissatisfaction with some aspects of the services, because home environments are not conducive to study and learning. The implementation of many of the virtual characteristics of university libraries should be based on a clear understanding of the local information needs, searching behaviours as well as being cognizant of how and why libraries are accessed.

**Keywords:** Library, satisfaction, low socio-economic, student needs, internet, study spaces, e-resources, higher education, Africa.

## 1. Introduction

It is undoubted that like most libraries, the higher education institution library has undergone significant changes over the last two decades, especially with the advent of rapidly changing technology and its resulting impacts on how students learn and access information. In much of the western context the notion of virtual libraries is a reality. However, in the African context such a notion seems "remote" from the perspectives of many students, especially those from the lower socio-economic backgrounds (Ogunsola, 2005).

Libraries play an important role in fostering intellectual, social and emotional development of communities (Sharma *et al*, 2010). Central to a developed and learned society is the library. With the advent of technology, the physical size of libraries seem to be shrinking as are their budgets, however, their service base is expanding facilitated largely by e-resources. Therefore, the historical measure of library quality based on lending or the breadth and depth of collection is no longer relevant (Walker 2011). The library service base has now expanded to include e-books, e-journals and magazines, numerous online databases and catalogues, as well as instant links, among others (DeRosa *et al*, 2006; Moyo, 2004). These have transformed the nature of the library service to include such things as reference assistance, tutorials and training for users, plagiarism and copyright information and even training in how to reference sources.

The Swedish study (Haya *et al*, 2007) suggests that prior training is critical to efficient and effective searches by students. Students that received training found twice as many relevant documents using Google Scholar. The study found that usability of the service is enhanced by prior instruction. In most academic institutions first year students are required to undergo some manner of "how to use the library" training impacting on the role of librarians.

For the effectiveness of an academic library in meeting student needs the design and development of services needs to look at how technology can deliver more information to potential users and also understand the specific needs and situations of its clientele. Library professional often have a tendency to be misled by rapidly changing information technology and lose focus on the particular needs of their market, be they staff or students. There is no doubt that services will continue to get evaluated and changed, but the direction of change must not be dominated by "production" but must also understand user or "market" needs (Ogunsola, 2005; Morales-Gomez & Melesse, 1998). This is particularly relevant to emerging and developing countries where the vast majority are from impoverished backgrounds and the first generation to enter university.

The Namibian higher education environment is undergoing rapid transformation driven primarily by the government's National Development Plan (NDP4) and Vision 2030 (NPC, 2012) which speaks of creating a knowledge-based economy by providing an educated and qualified workforce to enable the economic development of the country and reduce the high levels of youth unemployment. The target of the NDP4 is to reduce the unemployment rate to under 5% by 2030 from the 2011 high of 40%. While this has been a target for the country since independence in 1992, the unemployment rate has actually increased to date, reaching 51.2% under the broad definition, according to the 2008 Labor Force Survey. How unemployment has been defined over the period has resulted in various official rates, all consistently greater than 30% since about 2008.

Within this context, this study seeks student views on satisfaction with the library services, their dependence on the library as a place to access resources and to study and reasons that impede optimally desired use of the facilities. The study aims to identify the library service dimensions that should be evaluated in understanding service effectiveness, which in turn must be within a framework which puts students at the centre of operational activities.

## 2. Literature Review

One of the key responsibilities of higher education institutions is to provide education and training for citizens so that they participate effectively in the development of the country, especially in the context of emerging nations. This review of the literature commences with an overview of the library trends in developed countries, followed by a look at libraries set in emerging and developing countries.

Internationally, libraries today are highly networked hubs with a blend of print and digital information sources and the rate of growth in electronic information is shifting the balance from hardcopies to softcopies, allowing libraries to greatly increase their information capacity. The global trend is towards smaller physical library as access to digital resources expands (Johnson *et al.*, 2008). Information technology and widespread easy access has changed the information seeking behaviours of students and lead to a rapid growth in online access (Tyler and Hastings, 2011; Nicolas, 2008; De Rosa *et al.*, 2006). Library users are expecting ready and quick access to information which is dependent on issues such as broadband width and internet speed, which are often beyond the control of the library. Nevertheless, judgment of quality of library service is based on speed and efficiency of access among other factors. In measuring service quality, the SERVQUAL scales (Parasuraman *et al.*, 1988) are commonly used and these scales also provide the foundations for LIBQUAL (Moon 2007), used for measuring service quality in a library (Green, 2008; Yu *et al.*, 2008; Ahmed and Shoeb, 2009; Kiran 2010; Shoeb, 2011; Hossain and Islam, 2012).

Client satisfaction data is the key to understanding customer needs and initiating service quality improvements in a library. Therefore, it is a commonly used indicator of library performance (Cullen, 2001; Woodberry, 2006; McKnight 2009; Paberza, 2010; Tyler and Hastings, 2011; Hossain and Islam 2012; Balog and Plascak, 2012). With the rapid technological changes and the changing needs of users it is important that library management establish a culture on continuous improvements. As libraries expand their scope and improve their services brought about by technological pressures, they must not lose sight of the basic and practical needs of the market being served. Not all markets are the same. Not all library priorities need to be purely technology driven.

Tyler and Hastings (2011) utilizing the technology acceptance model (Park *et al.*, 2009) identify three critical parameters of modern technology driven library systems. The first dimension is the perceived ease of use which manifests itself in both the attitude towards and the intention to use. The second is the perceived usefulness, which is closely interrelated with enjoyment and general learning. The third is the acceptance and satisfaction, which relates to how well users adapt to the information system. The degree of satisfaction experienced is a function of the perceived ease of use, as well as the information needs of students being fulfilled. Tyler and Hastings (2011) found that students under the age of 25 years and those students more experienced with computer related tasks were found to be more satisfied with library resources. A study of college students (DeRosa *et al.*, 2006) found that ease of use was an issue as students reported experiencing difficulty finding relevant articles.

Meletioui (2010) research that is based on McMurdo (1980) and Whitehall (1992) identifies a number of library satisfaction dimensions: (1) Library operations relate to access to the physical library, hours of operation, internal ambiance and environment, and availability of reading rooms; (2) information, which is linked to signage and labeling, procedures and guides, and also database usage and usability; (3) collection quality, whether collection is up-to-date and relevant to the needs of users; (4) equipment, which are facilities such as photocopy machines, computers and printers, multimedia equipment and microfilm readers and (5) services include a range of offerings that add value by providing the interface between the "collection" and the "user". This is how the "production" elements of the library are interrelated with the "marketing" of the offering resulting in operational effectiveness. Library services include user friendliness of physical and online collections, accessibility of website, management of reference only collection, courtesy and knowledge of staff,

lending rules and penalties, rate at which returned items are shelved and rate at which collection is updated to match course requirements. Meletiou (2010) suggests a sixth dimension which relates to ordering of material and inter-library loans. This could also fall under “services” in the above list.

According to McKnight (2009) library service quality improvement can be sequential where service gaps are identified and rectified but it is more strategic to identify the more serious service gaps and focus on these. Measures of satisfaction are not always conclusive. For practical service improvement the degrees of satisfaction with the various elements of satisfaction is more important (Spreng and MacKoy, 1996, Schneider and Bowen, 1999, McKnight and Berrington, 2008; McKnight 2009). These service component groupings were identified above. It is important to understand what really matters to library users. For instance, Jamali and Tooranloo (2009) argue that when we measure library satisfaction and identify service gaps we may waste resources on service aspects that are of little importance to users. Their study concludes that getting access to the right information quickly is more important to students than variables such as staff knowledge and environment.

Service improvement priorities in a library are expected to be user driven (Sahu, 2006; Sahu, 2007) and not necessarily technology dominated, although there are information economies in digital libraries and network-based services (Jamali and Tooranloo, 2009), Esson *et al.*, (2012) highlight that to be successful the future focused academic library must design and develop the scope and quality of services that are shaped and informed by its customers. For continued improvements to occur in library services and offerings, it is critical that patrons be surveyed on an annual basis (Angell, 2013). Regular customer satisfaction surveys will provide a platform for change but will also require partnerships with the research and teaching stakeholders as well in any change implementation process (Hakala and Nygren, 2010). This view seems to be widely supported. A library should develop a systematic way to gather customer needs data, including surveys and focus groups as well as proper analysis of complaints and suggestions from users and stakeholders. Customer needs and preferences must be understood based on the environmental context within which the users exist (Sharma *et al.*, 2010).

A recent study of post-graduate students in Nigeria (Onuoha *et al.*, 2013) identified the top five most important services by the library were books (print), internet provision, electronic journals, opening hours and reading spaces, while personal assistance of library staff and inter library loan were ranked the least important. Walton and Leahy (2013) report that undergraduate students identified the top five most important library services as course textbooks, range of books, opening hours, study facilities and provision of computer. Internet speed and computer access for students is a common problem facing many institutions in Africa and other developing countries (Chaputula, 2013), in an era when the preferred resources are electronic in nature (Howard, 2007; Woods and Ireland, 2008).

### 3. The Study Background

African countries experience numerous problems associated with poverty, hunger, poor living conditions, poor governance and significant literacy issues (Jiyane and Onyancha, 2010). In researching information literacy (IL) education and instruction in academic libraries in South Africa, Jiyane and Onyancha (2010) report that those institutions participating in the IL programmes offer students services relating to getting access and using resources effectively; teach students how to collect information, the legal issues relating to their use and provide assistance in writing their assignments. However, these responsibilities do not belong solely to the library. Lwehabura and Stilwell (2008) suggest that teaching staff are stakeholders in this process and teaching and learning programme design must include the needs and resources of students, library and teaching staff.

The study was conducted at the Polytechnic of Namibia to ascertain the views of students in relation to the institution’s library. The library services nearly 10,000 students who largely come from a low social-economic group and the vast majority are first to enter university level education in their family. Many of these students are the first generation to get a decent education aimed at escaping the poverty cycle through higher education.

#### **Higher Education Libraries in Namibia**

There are two major public educational institution libraries in Namibia, the Polytechnic of Namibia and the University of Namibia (UNAM). These two institutions cater for approximately 25,000 students and in there is a private International University of Management (IUM) which has approximately 7,000 students serviced by a smaller library. The library at UNAM has a collection of 180,000 books and 300 printed journals subscriptions, while the Polytechnic of Namibia has 70,000 books and 223 printed journal subscriptions.

The Polytechnic of Namibia is transforming into University of Science and Technology, which is expected to be finalised in 2014, putting it on the same footing as UNAM with respect to funding. Traditionally, its funding levels have been much lower compared to UNAM, despite the fact that it has been offering degree programs at all levels for a number of years. In order for the Polytechnic library to offer its postgraduate students greater access to information resources, an agreement has been reached between the two institutions

which will allow Polytechnic post-graduate students access to the UNAM library free of charge.

The Polytechnic is programming its library services in a strategic manner in line with international trends in libraries. It is moving rapidly towards growing its e-journal collection, and expanding into e-books, and decreasing expenditure on print material. In 2013, its total expenditure on building its collection was US\$30,000, comprising 2800 printed items and 112,300 e-books. It is apparent that the strategy of moving towards electronics appears more cost effective and better value for dollars spent.

The Polytechnic library acquired 44 individual e-book multiuser licences, mostly for prescribed textbooks. These are offered to students and staff on MyiLibrary, which is Ingram’s Digital e-content aggregation platform of resources for public, academic and professional libraries and currently offers 400 000 e-books from leading publishers. The Library envisages purchasing additional prescribed textbooks in future from this database.

This study is designed to identify student perceptions of the library service and impediments to library usage, ingredients sadly missing from the strategic plan for the development of the library over the next five years. The methodology used in this study is presented below.

#### 4. Research Methodology

The data collection for this study used a convenience sampling technique also used in recent library satisfaction and service quality studies (Meletioui, 2010; Kiran and Diljit, 2011; Mahatma, Bakti and Sumaedi, 2013). The purpose of the study was to ascertain the reasons for visiting the library, frequency of visits, reasons that may have prevented visits, and to determine satisfaction and experience of users. The study was in response to various “study” related problems claimed by student revealed in informal interactions. Upon preliminary analysis of the survey data three formal focus group sessions were conducted involving a total of 87 students from second and third year levels. The key discussions related to the survey findings and were centred on library service accessibility, especially computers, special study rooms, and how students use the library. In addition, the focus groups discussed issues relating to home study environments and challenges.

The study was restricted to only the Polytechnic of Namibia library and was conducted a month prior to the examination period in order to avoid what is generally considered to be the peak period for academic libraries. Data gathering was based on a survey instrument comprising two pages containing mainly scaled responses. The study was purely quantitative in nature and no open-ended responses were sought. The purpose of the study was explained to respondents on a one-to-one basis and once the respondent agreed to participate the survey form was given to them to complete. There were 101 usable questionnaires completed. This survey was supplemented by three class-based focus group discussions on difficulties related to studying outside of the campus. Each of these groups comprised 20 to 30 students in the later part of their study programs.

Although the survey sample was small it was representative of the population as shown in Table 1, which compares the profile of the sample with that of the population. The first rule in establishing data validity is to ensure that it is representative of the population. As Table 1 indicates, there were only a few distance mode students in the sample, but this was to be expected as the study was conducted on campus, thereby capturing a higher proportion on full-time students.

Table 1: Study sample and population profile

Profile	Study Sample	Population 2013
Female	52%	55%
Male	48%	45%
Full-time students	70.3%	52.0%
Part-time students	24.8%	25.5%
Distance students*	5.0%	22.5%

\* Some on-campus students enrol in distance mode if they are unable to get full-time or part-time entry.

The variables selected for measurement and analysis were based on previous research on satisfaction with library services including Onuoha *et al* (2013). Walton and Leahy (2013), Sumaedi *et al* (2011), Wang and Shieh (2006) and Kiran and Diljit (2011) found that in the higher education context, service quality affects client satisfaction positively and significantly. These studies informed the selection of variables for measurement providing a mix of African and other international studies to enable comparison of findings and help identify any unique requirements of service offerings in the African context. Satisfaction levels were measured across 20 indicators adapted from similar studies in various contexts mentioned above. These items were measured using a 5-point Likert scale, ranging from 5 -strongly agree to 1 - strongly disagree. Not all services offered by the library are of equal importance from the student point of view (Jamali and Tooranloo, 2009). There were 15 items relating to products or services offered for which respondents were required to rate importance with options including very important, moderately important, important and not important at all. A “not applicable” option was also provided. In addition, the survey sought information on the rate of library usage, the main reason for the most recent library visit and reasons that had ever prevented them from visiting the library.



## 5. Findings and discussion

The study sample was small as only 101 survey forms were collected. However, the study does provide a picture of the problems facing student in relation to library use and some of the perceived impediments to greater utilisation of the library. It was found that the campus has a number of locations students use for study proposes, including vacant classroom, foyers of buildings and outdoor where there is access to internet. Many of the students reported that they prefer to do their study on campus as the domestic environment is not conducive to study due to lack of facilities. In addition, students reported that there is a preference to studying in groups for which the campus is the best location. The polytechnic has over 10,000 students of which just over half are studying on a full-time basis, the remainder being part-time and distance mode students. The library has general use seating for approximately 400, in addition to 7 small rooms for groups of 6 to 8.

The majority (64%) identified the main reason for the last visit to the library as being for study, research or assignments, 15% for borrowing or returning items, 10% for printing or copying, 7% for internet and computer use and 4% for newspapers. In addition, 36% had borrowed a library item in the last week while 26% has not borrowed an item in that semester. It should be noted that the study was conducted in the later part of the semester period.

The library has 124 public access computers and two printers for student use. The study identified that the major impediments to library use were “not being able to access computers” (74%) and “slow internet service” (92%), which tends to result in students occupying computers for long periods to do simple searches or downloads, increasing equipment turnover time. This is consistent with other studies of library and internet services in Africa. For example, (Chaputula, 2012) found that while the adoption and use of ICT was high students tended to use personal dongle or internet cafes and the university network was not widely used because of the limited access to computers, a generally poor network infrastructure resulting in service outages and slow service.

Most students did not regard the issue relating to noise level and the general level of comfort to be of concern or impediments to library visits. The study found a major disconnect between student needs and library’s capacity to meet the primary needs for which the students would generally look to the library to address. A large number of students (53%) indicated that they prefer to conduct their study in the library, despite being aware of the shortcoming relating to access mentioned above. Most students were not able to access their prescribed textbooks through the library. The cost of textbooks in Namibia is extremely expensive compared to income levels of the student body. Where e-books are available, these are generally printed by students, as this is more suited to their study style and learning backgrounds.

Overall satisfaction ratings are low, indicated by the skewness of item rating towards “disagree” and “strongly disagree”. This is shown in Table 2.

Table 2: Satisfaction levels with library services.

		Mean Score*	Standard Deviation	% Disagreed
1	Required resources are always available	3.29	1.10	51.0
2	Equipments are modern and up to date	3.16	1.11	42.6
3	The facilities and equipments (eg printers, photocopy machines meeting rooms etc) available in the library cover all the basic study needs of the library	3.05	1.16	43.0
4	The Library website is easy to navigate	3.31	1.18	50.5
5	The library collection meets most of my study and learning needs	3.49	1.25	53.0
6	I am able to access all the references and resources I need in the library	3.38	1.22	54.4
7	The photocopying and printing services are accessible	3.35	1.18	57.7
8	I often use the multimedia rooms and presentation rooms in the library	3.11	2.12	26.9
9	I often use the library study rooms, meeting rooms and seminar rooms	3.48	1.79	36.6
10	I am fully aware of what is available in the library	2.99	1.08	37.0
11	The library staff offer their expertise to library users whenever needed	3.00	1.32	36.0
12	I am satisfied with the library opening hours	3.31	1.34	54.1
13	The library provides a quite and comfortable enviroment for studying	3.69	1.41	61.2
14	There are suitable areas within the library for relaxing and taking a break	2.75	1.61	32.3
15	I prefer to do my study in the library	3.36	1.35	47.0
16	I am satisfied with the copying and printing services provided by the library	3.35	1.18	57.7
17	I am well aware of the services the library provides	3.16	1.11	42.6
18	Staff in the library are helpful	3.01	1.20	38.8
19	I am able to access computers in the library when I need to	2.70	1.28	36.0
20	I am able to access textbooks that I need for my course from the library	3.38	1.22	54.4

\* Mean score is the mean of responses on a 5-point scale where 1= strongly agree to 5= strongly disagree.

Generally there was an unusually high level of dissatisfaction experienced by students, which comprised a

composite score of negative responses (for example “strongly disagree” and “disagree”). This can be explained by the divergence of expectations on the part of students based on their needs and the expectations on the part of the library to stay with international trends in library services. There appears to be a failure to take account of the unique local circumstances which students face, such as a paucity of resources, expensive price of books, low income levels and domestic environments not being conducive to study and learning.

The survey conducted was a response to feedback about learning challenges faced by students. In addition to which focus group discussions were conducted. The focus group related to the survey findings (Table 1) and centred around “what do you need to study at home” and “what would be the preferred study location and why”. Both the survey and the focus group indicated that the students were generally aware of what resources were available and how to access them as they had received some training and orientation. However, the focus group indicated that “you have to come really early to get access to computers” and that one has to be lucky to get one unless you wait in for lengthy periods. This often resulted in not meeting assignment deadlines, although lecturers did not accept this as an excuse. Many assignments required access to computers for research and e-resource access so if you are unable to get a computer you fall behind in your work. In the survey 55% agreed that they were “able to access computers in the library when I need to” and 36% disagreed. In addition, 51% did not believe that required resources were always available” and 54% claimed that they were unable to get access to course textbooks from the library.

Table 3: Factor groupings

<b>Key library related service dimensions</b>					
<b>Factors</b>	<b>Student Services</b>	<b>Staff</b>	<b>Collection</b>	<b>Study spaces</b>	<b>Availability and access</b>
I am satisfied with the copying and printing services provided by the library	.759				
The photocopying and printing services are accessible	.757				
I am able to access textbooks that I need for my course from the library	.669				
The facilities cover all the basic study needs	.600				
I am able to access all the references and resources I need in the library	.529				
I am able to access computers in the library when I need to	.477				
The library staff offer their expertise to users whenever needed		.837			
Staff in the library are helpful		.694			
I am fully aware of what is available in the library		.617			
The library provides a quiet and comfortable environment for studying		.575			
The library website is easy to navigate		.477			
Required resources are always available			.811		
Equipment are modern and up to date			.746		
The library collection meets most of my study and learning needs			.526		
I often use the multimedia rooms and presentation rooms in the library				.819	
I often use the library study rooms, meeting and seminar rooms				.696	
I am satisfied with the library opening hours					.757
There are suitable areas within the library for relaxing and taking a break					-.541
I prefer to do my studying in the library					.432

Exploratory factor analysis was run with the variables in Table 2, using Principle Component Analysis and varimax rotation method with Kaiser normalisation. The rotation converged in six iterations, identifying five factors and accounting for 65% of response variation. Cronbach’s alpha was used to validate the data and an acceptable score of .73 was obtained. Based on the item groupings the factors were labelled as student services/facilities, staff, collection, study spaces, and availability, which are shown in Table 3. The first factor “student oriented services and facilities” comprised all those variables relating to copying and printing services, access to course prescribed textbooks, study places, reference material and computers. The second factor was “staff” which relates to variables concerning knowledge and helpfulness of staff as well as training and enforcing a good study environment. The variable “the library website is easy to navigate” also grouped with staff related variables. The third factor was labelled “collection” and pertained to variables concerning availability of resources, state of the equipment and the library collection. The fourth factor was labelled “study space” which

concerned variables pertaining to study, meetings and multimedia rooms. The fifth factor was labelled “availability” relating to variables concerning opening times, suitable places to relax in the library and student preference to studying in the library. These factors account for the areas that university library management must consider in structuring and prioritising library services.

## 6. Conclusions

In an environment characterised by poverty and social and economic disadvantage facing the student body libraries can play a pivotal role in facilitating access to learning resources, study spaces and training to utilise and optimise library resources. Academic libraries must not lose sight of the needs of the student body as their prime focus and find a balance between this and the needs and demands of faculty and a desire to emulate the trends evident in libraries servicing the middle classes. In the African context, more so than in western countries, the library must realign its goals to meeting student needs by understanding the situations and conditions facing learners. Satisfaction data can easily be misconstrued but the purpose of doing such studies is to identify, not satisfaction levels per se, but rather the potential services gaps and strategies for their improvement.

The study identified five key library service parameters which related student services/facilities, staff, collection, study spaces, and availability (access). In the context of developing countries, these service dimensions indicate the areas that need careful examination in prioritising library expenditure and where most effort may need to be directed. Libraries can expand and diversify the range of services they offer in line with the suggestions made by Jiyane and Onyancha (2010) to provide information literacy training and assignment support in recognition of the need. This can be achieved by establishing closer relations with faculty to integrate information literacy with curriculum and assessment providing a holistic view of student centeredness. Internet bandwidth can be a challenging problem in most African countries, but it is vital both from the resource accessibility and cost points of view that within the academic environment this matter be given priority. This together with subsidised laptops and other mobile devices or a system of hiring such equipment, supported by widespread campus wireless hotspots would prove to be better investment than physical infrastructure.

The study has implications for educational policy both at the institutional and government levels. Student centeredness requires an understanding of the needs of the study body in the context of their backgrounds and life circumstances. While the government provides tuition fee support to the overwhelming majority of tertiary students in Namibia, educational policy needs to invest in creative solutions to address the information, learning and technology needs as a means of addressing the low graduation rates. Creating a knowledge economy requires more than simply providing financial support for students; it requires the creation of an environment that supports learning. The library and access to learning resources is central to this endeavour. The institutions must be given financial support to fully utilise ICT to its optimum, by increasing the bandwidth and external internet hotspots, as well as providing access to computers and study locations throughout the campus.

This study has significance for information technology based changes to libraries in developing communities. However, there is need for further research into the home study situations and environments facing secondary and tertiary level students in developing countries so that resource allocation decisions can address the difficulties facing students and lead to informed trade-offs between physical and digital expenditure on library services. Qualitative studies are required to understand the types of limitations home environments presents and the degree of reliance on institutional learning facilities.

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